U.S. DEPARTMENT OF COMMERCE
National Technical Information Service

PB-260 938

Air Pollution Abstracts
Volume 2, Number 8
August 1971

Environmental Protection Agency, Research Triangle Park, N C

Aug 71

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PB 260 938

Volume 2, No. 8
August 1971

CODEN: APABC-71-08

AIR POLLUTION ABSTRACTS

REPRODUCED BY
NATIONAL TECHNICAL
INFORMATION SERVICE
U. S. DEPARTMENT OF COMMERCE
SPRINGFIELD, VA. 22161

U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Air Programs

TECHNICAL REPORT DATA
(Please read Instructions on the reverse before completing)

PORT NO. APABCA- 2-8-1971	2.	3. RECIPIENT'S ACCESSION NO.
4. TITLE AND SUBTITLE Air Pollution Abstracts Volume 2 , No. 8		5. REPORT DATE August 1971
		6. PERFORMING ORGANIZATION CODE
7. AUTHOR(S)		8. PERFORMING ORGANIZATION REPORT NO.
9. PERFORMING ORGANIZATION NAME AND ADDRESS Air Pollution Technical Information Center Research Triangle Park, North Carolina 27711		10. PROGRAM ELEMENT NO.
		11. CONTRACT/GRANT NO.
12. SPONSORING AGENCY NAME AND ADDRESS Same		13. TYPE OF REPORT AND PERIOD COVERED
		14. SPONSORING AGENCY CODE

15. SUPPLEMENTARY NOTES

16. ABSTRACT

This periodical is published to inform air pollution personnel of the Environmental Protection Agency (EPA), and others, of technical literature recently accessioned by the Air Pollution Technical Information Center (APTIC). For each accession, its Abstract Number, APTIC accession number, bibliographic citation, and abstract are given. Translations are cited with their sources whenever possible. The subject fields are as follow: Emission Sources; Control Methods; Measurement Methods; Air Quality Measurements; Atmospheric Interactions; Basic Science and Technology; Effects-Human Health; Effects-Plants and Livestock; Effects-Materials; Economic Aspects; Standards and Criteria; Legal and Administrative; Social Aspects; and General and Miscellaneous. All abstracts are listed under one of the above subject fields. A subject and author index are included. This issue contains abstracts 11987 - 12681.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
Air pollution Abstracts Information retrieval		13B 5B

18. DISTRIBUTION STATEMENT Unlimited	19. SECURITY CLASS (This Report)	21. NO. OF PAGES 338
	CURITY CLASS (This page)	22. PRICE $10,00

EPA Form 2220-1 (9-73)

AIR POLLUTION ABSTRACTS

Vol. 2, No. 8 August 1971

CONTENTS

Introduction ii
Subject Fields and Scope Notes iii
Abstract Bulletin 1
Subject Index si-1

The terms that most closely describe the information presented in the documents are arranged alphabetically. The title of each document is indented below the subject term. The Abstract number follows on the next line.

Author Index ai-1

Personal authors (maximum of five per document) are arranged alphabetically. The names are presented last name first. The title of the document is indented below the author's name; when the author was the first author of a title, it is designated by an asterisk. The Abstract Number follows on the next line.

Use of funds for printing this publication approved by the Director, Bureau of the Budget, March 31, 1970.

INTRODUCTION

This periodical is published to inform personnel of the Environmental Protection Agency's Office of Air Programs (OAP), and others, of technical literature recently accessioned by the Air Pollution Technical Information Center (APTIC). For each accession, its Abstract Number, APTIC accession number, bibliographic citation, and abstract are given.

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As another service, abstracts of all literature in APTIC (not just in a single issue of this periodical) on any subject related to air pollution will be provided free of charge upon request. APTIC can search information more recent than that in the current issue of this periodical because of the lapse of time entailed by editorial, make-up, and printing work. More than 1400 subject index terms are available for such searching—more than those included in the subject index in each issue.

SUBJECT FIELDS AND SCOPE NOTES

1. EMISSION SOURCES

Information pertaining to an industry, process, or material associated with air pollution. Documents in this category are concerned primarily with characteristics of a specific class of emission sources including types, rates, industries; secondary coverage may include effects, control methods, etc.

2. CONTROL METHODS

Includes equipment and both specific source control and general abatement efforts. Included are documents describing the operating principles, design, operation, efficiency, etc., of equipment and methods of removing pollutants. The scope of the document can vary from a device for a specific source to an approach applicable to an entire industry—e.g., automobiles.

3. MEASUREMENT METHODS

Includes equipment as well as methods. Confined to development, testing and evaluation of pollutant determination methods (sampling, analytical, monitoring) and equipment, as such. Data obtained by use of methods in specific applications are placed in the applicable subject categories.

4. AIR QUALITY MEASUREMENTS

Pollution measurements in the ambient air, generally related to specific geographical locations, such as area surveys. Also includes general reviews of area situations and emission source inventories.

5. ATMOSPHERIC INTERACTION

All chemical and physical phenomena occurring in the atmosphere. Included is material on dispersion, air pollution forecasts, meteorological effects, topographical effects, photochemical reactions in the atmosphere, etc. Laboratory studies of photochemical reactions are assigned to Basic Science and Technology.

6. BASIC SCIENCE AND TECHNOLOGY

General discussions or data compilations for the basic physical and chemical properties of pollutants. Theoretical and laboratory studies on related chemical and biological reactions and mechanisms. Mass transfer and other basic knowledge related to process engineering applications in emission control or abatement. Excludes photochemical studies in the atmosphere and biochemical studies related to effects of air pollution.

7. EFFECTS–HUMAN HEALTH

Covers medical and epedemiological studies; biological effects other than those on plants and livestock produced by air pollutants; laboratory animal experiments.

8. EFFECTS–PLANTS AND LIVESTOCK

Effects on vegetation—crops, trees, other plants—and on livestock as distinguished from laboratory experimental animals.

9. EFFECTS–MATERIALS

Deterioration, corrosion, etc., of physical materials, buildings, and structures.

10. ECONOMIC ASPECTS

Economic implications of air pollution and its control, e.g., economic losses from pollution damage, and costs of control programs or equipment in general.

11. STANDARDS AND CRITERIA

Recommended or adopted guides, criteria and standards for allowable emission limits or pollutant concentrations, air quality, equipment characteristics, and fuels.

12. LEGAL AND ADMINISTRATIVE

Legal aspects include legislation, ordinances, rules, litigation, hearings, decisions, etc. Administration covers administrative and miscellaneous information concerning control agencies and control and research programs. Typical topics are personnel, budgets, contractural activities and program descriptions.

13. SOCIAL ASPECTS

Sociological and psychological aspects such as social attitudes, public opinion studies, public relations, and public information.

14. GENERAL AND MISCELLANEOUS

Reviews of general problems, trends and background. Documents not assignable to other categories.

ABSTRACT BULLETIN

EMISSION SOURCES

11987 APTIC NO. 29517

BUS AND VEHICLE FOR TRANSPORTATION WITH ELECTRIC DRIVE. *(Bus und Transporter mit Elektroantrieb). Text in German. Umschau (Berlin), 71(8):286-287, April 1971.*

Electric drives for cars and buses are presently of great interest or potential alternatives to the air polluting internal combustion engine. Apart from noiseless and emission free operation, electric drives have the advantage of requiring no clutch and gear. The energy source, however, still presents difficulties. In general, lead-nickel-zinc or nickel-cadmium batteries are still used, and these are extremely heavy. Intense development of zinc-air batteries or fuel cells is under way. The operating range of an electrically driven bus can be extended by equipping the vehicle with a charging aggregate that is driven by a combustion engine and put into operation outside residential areas. Alternately, the batteries can be replaced at bus terminals. Daimler-Benz has developed a hybrid drive. A bus with this drive has been in operation for two years; in nonurban areas, its energy demand is met by a three phase asynchronous generator driven by a 65 hp diesel engine. In urban areas, the energy is supplied by batteries. An electrically driven truck with plastic chassis has recently been introduced. Its operation will require a network of replacement stations for spent batteries.

11988 APTIC NO. 29567

NITROGEN DIOXIDE. *Am. Ind. Hyg. Assoc. Quart., vol. 17(232-233, June 1956. 9 refs.*

The properties and hazards of nitrogen dioxide are reviewed in the context of industrial health. In addition, sampling and analytical, control, and treatment procedures are presented. The recommended maximum atmospheric concentration of NO2 (8 hrs) is 5 ppm by volume; workroom concentrations should be maintained below this level by means of process ventilation and enclosure. Individuals repeatedly exposed to low concentrations of NO2 should have routine medical examinations, including chest x-rays. Those experiencing acute exposure should be followed with medical examinations for some time.

11989 APTIC NO. 29886

EXPERIMENTS WITH ELECTRIC VEHICLES. *(Versuche mit Elektrofahrzeugen). Text in German. Elektrotech. Z.-B., 23(9):212-213, 1971.*

The electrically driven vehicle is receiving increasing attention in West Germany because of the alarming environmental pollution. In the summer of 1971, an electric bus will have its trial run. The 10-m long vehicle accommodates 95 passengers. The battery weighs 4 tons, is housed in a 2.9-m long trailer, and must be replaced after 50 km. The bus can reach a maximum speed of 60 km/hr. The first electric truck, with synthetic chassis will also make a trial run shortly. The battery is recharged overnight. In the U. S., a truck driven by hydrogen-oxygen fuel cells has been developed which, at a speed of 110/km/hr, covers a distance of 200/km. In Paris, a hydrazine battery has been developed with the dimensions 50/50/20 cm. From Japan comes news of a new sodium sulfur battery which is more powerful and less expensive than the conventional lead-acid battery. In addition to these developments, rail-bound vehicles with linear motor drive are being developed. Producing no noise or exhaust gases, the vehicles probably constitute the public transportation system of the 1980 s.

11990 APTIC NO. 29914

THE REMOTE HEATING PLANT IN RECKLINGHAUSEN--A CONTRIBUTION TO THE PROTECTION OF THE ENVIRONMENT. *(Fernheizung Recklinghausen--Ein Beitrag zum Umweltschutz). Text in German. Elektrizitaetswirtschaft, 70(8):219-223, 1971.*

Recklinghausen has joined many other cities in West Germany which operate remote heating plants. By this move, Recklinghausen is spared many individual air polluters. Moreover, city traffic is relieved of vehicles for fuel and ash transport, which also contribute to air pollution. In a few years, the remote heating plant will supply 1000 individual facilities with remote heat. If those buildings were heated by oil or coke, 250,000 to 300,000 cu m more diesel exhaust gases would be emitted into the air annually just by fuel transport. The waste gases of the remote heating plant itself are cleaned in an electrostatic precipitator. They leave the plant through a 145-m stack. The electrostatic precipitators have a collection efficiency of 99.6%.

11991 APTIC NO. 30028

ONE ANSWER TO PLASTICIZER POLLUTION. *Mod. Plastics, 48(6):48-49, June 1971.*

Vinyl processing frequently results in emissions of plasticizer vapors that can cause severe fogging and disagreeable odors in surrounding areas. These problems are avoided by use of the Brink Mist Eliminator, which removes plasticizer droplets by intercepting and trapping them in a bed of glass fibers. While capable of higher efficiencies, Brink devices in actual installations are generally designed to operate at efficiencies of 94-99.3%. High- energy scrubbers have comparable efficiencies, but their operating costs and pressure requirements are higher.

11992 APTIC NO. 29489

Aaronson, Terri

MERCURY IN THE ENVIRONMENT. *Environment, 13(4):16-19, 21-23, May 1971.*

Sources of mercury in the environment, levels of mercury contamination, biological and medical aspects of mercury poisoning, and maximum permissible levels of mercury are discussed. In the past, the pulp and paper industry was one of the largest consumers of mercury, which was used to keep slime from forming on the manufacturing equipment. Some chloralkali plants use mercury as a catalyst in the production of chlorine and caustic soda. Agricultural use in both the U. S.

and Canada accounts for about 4% of the total mercury used annually in each country. Evidence from studies of mercury content of feathers of fish-eating birds indicates that mercury contamination of water parallels an increase of industrial activity. One of the factors which causes methyl mercury to be held in the body for extended periods is that ingested mercury is excreted in the bile to the intestines, but is almost immediately reabsorbed back into the blood stream, allowing it to further circulate in the body. From studies made in Niigata, Japan, the lowest level of mercury in the blood of a person beginning to show signs of poisoning is 0.2 ppm.

11993 APTIC NO. 27535

Azpitarte, J. L., L. Marzo, and F. Camacho

NOMOGRAPH GIVES NO OXIDATION. *Hydrocarbon Process., 50(2): 107-111, Feb. 1971. 9 refs.*

Equations and nomographs are provided for estimating the degree to which nitric oxide is oxidized to nitrogen dioxide in nitric acid plants. The equations consider two extreme hypothetical models--complete mixing and plug flow; they assume that the influence of the reverse action can be neglected and that the total number of moles can be considered as constant. The nomographs enable the determination of the oxidation that would take place in certain nitric-acid plant equipment. Their usefulness is illustrated by application to a case of plug flow where the outlet temperature is not known.

11994 APTIC NO. 29669

Backus, Eugene S.

INCINERATOR DESIGNED TO ANTICIPATE PROBLEMS. *Public Works, 102(4):79-81, April 1971.*

A new municipal incinerator plant is characterized by an enclosed tipping area, automated weighing system, drainable storage pit, crane transfer, continuous-feed reciprocating stoker with continuous siftings removal, two combustion chambers, and a wet scrubber with a recirculating water system. The design capacity of the incinerator is 125 tons/24 hr day, which is deemed adequate for a projected population of 38,000 in 1990. A scrubber system was chosen because it removes not only fly ash but also the acidic components present in the flue gas. Designed for handling 67,100 cfm of dry gas and 9300 cfm water vapor at 1550 F, the system consists of a venturi scrubber with two quench sprays and two emergency sprays. Water for the scrubber is obtained as chlorinated effluent from an activated sludge-type waste-water treatment plant. City water serves as an emergency back-up supply. To prevent corrosion by the recycled scrubber water, the scrubber is lined with rubber and acid-resistant brick. Stack ductwork, and piping are protected by fiberglass reinforced polyester. Total cost of the incinerator was about $1.6 million (1970).

11995 APTIC NO. 29782

Becker, K.

WHY LEAD IN GASOLINE? THE EFFECT OF LEAD CONTAINING ANTI-KNOCK AGENTS FOR OTTO ENGINE FUELS. *(Warum Blei im Benzin? Wirkungsweise von bleihaltigen Antiklopfmitteln fuer Ottokraftstoffe). Text in German. VDI (Ver. Deut. Ingr.) Nachr. (Berlin), 25(9):7, 1971.*

Since the discovery of the anti-knock effect of tetraethyl lead in 1920, this compound has been used as antiknock agent for gasolines. Usually 0.5 gPb/l are added to achieve octane numbers of 5 to 10. In spite of intense research, the exact operating mechanism of tetraethyl lead as antiknock agent remains known; however, the chain break theory is generally accepted. It is estimated that 70 to 80% of the lead residues are emitted; the remaining particles deposit in the combustion chamber and occasionally are loosened and then emitted. As the combustion chamber of the engine becomes smaller, because of the depositions, the octane number increases. However, these lead residues do reduce wear and tear. All attempts to replace tetraethyl lead with another antiknock agent have failed, since other compounds are either uneconomical or even more toxic than the lead compound.

11996 APTIC NO. 29786

Becker, Karl H.

PHYSICAL-CHEMICAL PROBLEMS OF AIR POLLUTION. *(Physikalisch- chemische probleme der Luftverunreinigung). Text in German. Chem. Unserer Zeit., 5(1):9-18, Feb. 1971. 46 refs.*

Principal air pollutants are reviewed. Carbon monoxide is generated by the incomplete combustion of fossil fuels, for instance in an automobile engine which emits 0.5 to one ton of carbon monoxide per automobile per year. Since CO is converted to the harmless carbon dioxide at elevated temperatures only, it can stay in the atmosphere for two to three years. Sulfur dioxide is produced when heavy fuel oils and coal, containing sulfur in various concentrations are burned. When in the air, sulfur dioxide is oxidized to sulfur trioxide, which can combine with water vapor to form sulfuric acid and can cause the formation of smog which disappears from the atmosphere with rain. Hydrocarbons are emitted by petrochemical industrial plants and are also components of automobile exhausts. Automobile exhausts also emit nitric oxide and nitrogen dioxide. Halides as pollutants usually occur in small concentrations, except in some areas of steel and aluminum producing plants where greater concentrations of hydrochloric and hydrofluoric acids may occur. The incineration of scrap synthetic materials, such as polyvinyl chloride and teflon also cause pollution from the chlorine and fluorine compounds. Other pollutants mentioned are carcinogens such as benzpyrene and other polycyclic hydrocarbons contained in the soot emitted by diesel engines and lead compounds present in automobile exhaust gases, if gasoline containing tetraethyl lead as antiknock agent is used.

11997 APTIC NO. 30067

Blanchard, Lawrence E., Jr.

TAKING ANOTHER LOOK BEFORE WE TAKE THE LEAD OUT. *Automotive Eng., 78(12):24-29, Dec. 1970.*

Although lead is incompatible with all catalysts that have been suggested for use in catalytic converter systems to reduce engine exhausts neither is any catalyst available for use with unleaded gasolines; removal of lead will only lead to inefficient cars at increased costs. Moreover, removal of lead antiknocks from all gasolines would reduce particulates in the atmosphere only about 1% on the average, and any improvement in visibility would be more than offset by the smog effects of the reactive hydrocarbons necessary to replace lead. As indicated by one recent study, the photochemical reactivity of auto emissions was increased by as much as 25% when a typical leaded gasoline was replaced with a prototype unleaded fuel. Future emission standards can be met by operating automobiles either with excess fuel or with excess air. These approaches have already been successfully tested on prototype cars and could easily be adopted to production models.

11998 APTIC NO. 29739

Brinke, Robert

SELF-IGNITION OF GASEOUS FUELS THROUGH THE HEATING EFFECT OF A WAST GAS STREAM. *(Die Selbstzuendung von Brenngasen durch Waermeeinwirkung eines Abgasstromes). Text in German. Tech. Ueberwach. (Duesseldorf), 12(1):9-14, Jan. 1971. 5 refs.*

The conditions under which hot waste gases emanating from a combustion process can cause ignition of residual unburned gases in a space before or inside the chimney are examined. As a function of available free oxygen in the waste gas, and of the temperature, three zones were determined by a series of experiments, one being outside of self-ignition, one of delayed self-ignition, and one of undelayed self-ignition. A relation between temperature and the so-called induction time, which means the time delay in the second mentioned condition, was established by some researchers. The delay becomes increasingly shorter with higher temperature, until the undelayed zone is reached. The accompanying pressure rise is largest with delayed ignition, and becomes a minimum with undelayed ignition. Besides the free oxygen, the inert gases in the mixture have an influence on the phenomenon discussed. An experimental set-up is described which consists of a 400 mm i.d. by 1500 mm long combustion chamber, ahead of a mixing chamber of 600 mm i.d. by 3400 mm length, followed by the chimney. The control equipment was set to ensure that the hot waste gases did not contain more than 0.1 percent by volume of combustible gases. A fresh combustible ga was brought into the mixing chamber, there to be ignited by the heat of the waste gases. Temperatures, pressures and compositions were checked at several points along the mixing chamber. In actual practice, if self-ignition of waste gases occurs, steps have to be taken to either modify operating temperatures, or look for other remedies, such as improved combustion to reduce the volume of unburned combustible gases in the waste gas.

11999 APTIC NO. 29872

Bryce-Smith, D.

LEAD POLLUTION--A GROWING HAZARD TO PUBLIC HEALTH. *Chem. Brit., 7(2):54-56, Feb. 1971. 21 refs.*

Levels of airborne lead are noted to have increased markedly since the Industrial Revolution, and very sharply since about 1940. The increase is particularly important because approximately 50% of airborne lead can be absorbed on inhalation, in contrast to the 5-10% absorbed from lead-contaminated food and water through the alimentary tract. Several studies have shown the principle source of airborne lead to be the lead-containing aerosol emitted with exhaust fumes from motor vehicles operating on gasolines with lead alkyl antiknock agents. As determined by a U. S. study, no other toxic chemical pollutant has accumulated in man to average levels so close to the threshold for overt clinical poisoning. Among the general population, blood-lead levels alone exceed those at which interference with metabolic processes can occur. Among children, even modest elevations of blood lead appear to be associated with biochemical abnormalities in the brain.

12000 APTIC NO. 30021

Buenz, P.

CAUSES, MEASUREMENT AND LIMITATION OF PARTICULATE EMISSION FROM OIL-FIRED STEAM BOILERS. *(Ursachen, Messung und Begrenzung des Feststoffauswurfes aus oelgefeuerten Dampfkesseln). Text in German. Energie (Munich), 23(5):165-166, May 1971. 2 refs.*

Three types of particulates can be determined in waste gases from oil-fired furnaces: fly ash, which is a reaction product of the non-combustible ash-forming components in the fuel; soot, which is formed through liberation of carbon during combustion in the gaseous phase; and coke from cracking processes in the liquid phase of the fuel droplets. Fly ash is produced only with heavy fuel oil. After emission, soot particles remain suspended in the atmosphere and reach the ground through a slow diffusion process. Coke particles develop through incomplete combustion. Soot flakes develop through adsorption of the particles emitted from the combustion chamber on wet surfaces. A prerequisite to these processes is a surface temperature below the dew point and the condensation of sulfuric acid from the flue gases on these surfaces. Adsorbed particulates, which form flakes having diameters of up to 5 mm, contain iron sulfate and free sulfuric acid.

12001 APTIC NO. 29832

Burke, Edward

CEMENT DUST AT GREAT BRITAIN. *(Cementovy prach ve Velke Britanii). Text in Czech. Stavivo, 49(2):46-49, 1971. 3 refs.*

Various cement production processes are compared from the point of dust origin and methods of dust collection in kilns and mills in cement works by separators and filters. Dust measurement methods in gases and the atmosphere are also discussed. Several British regulations are described.

12002 APTIC NO. 30132

Chory, J. P.

THE SE-DUCT--AN IDEAL SOLUTION FOR GAS HEATERS. *(Der Luft- Abgas-Schornstein - eine ideale Loesung fuer Gasfeuerstaetten). Text in German. Sanit. Heizungstech., 36(5):405-411, 1971. 4 refs.*

The SE-duct is a vertical duct beginning in the basement and jutting out over the roof. In the basement, one or two horizontal ducts connect the SE-duct with the atmosphere. Through the horizontal ducts, fresh air enters the vertical duct. The gas heaters which are connected to the vertical duct have an opening in the lower section for primary air supply and another in the upper section for exit of the waste gas. The burner suitable for connection to the SE-duct must have an optimum primary air supply so that a carbon dioxide concentration of 1.5% by volume, the combustion process remains stable and clean. The burner must have excellent distribution of secondary air to reduce carbon monoxide formation and for flame control.

12003 APTIC NO. 30001

Clay, A. J.

MARKET TENDENCIES FOR LEAD AND ZINC. *(Tendenzen auf dem Markt fuer Blei und Zink). Text in German. Metall. (Berlin), 25(5):523-524, 1971.*

One reason for the decrease in the market for lead observed over the past six months of the last year is the controversy over lead in gasolines. Many countries introduced regulations to reduce the lead content in gasolines. There are signs of a new awareness, however, that lead is probably the least toxic substance in the exhaust gases of automobiles. Elimination of lead might, under certain circumstances, worsen the exhaust emissions. Because of pending regulations and the anti-lead drive, a surplus of 12,000 metric tons arose.

12004 *APTIC NO. 28337*

Daniels, B.

TODAY'S BASE OF EUROPEAN MINERAL OIL SUPPLY. (Heutige Basis der europaeischen Erdoelversorgung). Text in German. Mitt. Ver. Grosskesselbesitzer, 51(1):17-23, Feb. 1971. (Presented at the VGB - Fachtagung 'Oelfeuerungen 1970; Munich, Oct. 9, 1970, Bremen, Oct. 23, 1970 and Koln, Nov. 6, 1970.)

Eighty percent of the European demand for mineral oil is met by supplies from the Near East and Libya, and 10% by supplies from other African nations. Venezuela and East European countries contribute about 5%. In 1969, West European mineral-oil consumption amounted to 550 million tons. Crude oil from Algeria and Libya has a low sulfur concentration of 0.14 and 0.42% by weight, but oil from Venezuela, Iran, Iraq, Kuwait, and Saudi Arabia has sulfur concentrations between 1.2 and 2.95% by weight. Crude oil from Brunei has the lowest sulfur concentration--0.09% by weight. The stringent regulations imposed by government agencies for the control of air pollution favor the import of low-sulfur crude oil. With the exceptions of Sweden (2.5%), Norway (2.0%), and Spain (3.0%), the maximum allowable sulfur concentration in heavy fuel oil is 3.5% in almost all West European countries.

12005 APTIC NO. 30002

Danne, F. J.

CLOSE SCRUTINY OF AUTOMOBILE EXHAUST GASES. TECHNICAL INSPECTION SERVICE FOR AUTOMOBILES IN NEW PREMISES. *(Autoabgase unter der Lupe. TUEV-Forschungsstelle fuer Kraftfahrzeuge in neuen Raeumen). Text in German. VDI (Ver. Deut. Ingr.) Nachr. (Berlin), (14):5, April 7, 1971.*

The Technical Inspection Service (Technischer Ueberwachungsverein) of Rhineland Westphalia has opened a new research station which serves all of West Germany as an automobile exhaust gas inspection station. It is equipped with all necessary facilities to conduct the California test as well as European and West German inspection programs. In one workshop, the vehicles can be brought to the temperatures required to have uniform conditions for the various measurement and testing programs. The inspection station also tests exhaust gas decontamination units which can be installed in older cars. Since 1965 about 50 such units have been tested; only a few of them are capable of reducing carbon monoxide emission efficiently.

12006 APTIC NO. 29539

Eda, Shizuo, Hiroshi Ito, Hiroshi Hikichi, Yoshiichi Funayama, Shijeo Nagayama, and Kaoru Nishiyama

HEAVY METAL POLLUTION IN THE ONAHAMA INDUSTRIAL AREA. 1ST REPORT. DISTRIBUTION OF HEAVY METALS IN SOIL. *(Onahama kogyo chitai niokeru jukinzoku osen. Dai 1 po. Dojo no jukinzoku osen bunpu to sono kento). Text in Japanese. Fukushima Kogyo Koto Senmon Gakko Kiyo (Mem. Fukushima Tech. Coll.), 7(1):22-32, 1971. 15 refs.*

The amount of heavy metal pollution in the Onahama industrial area soil was determined by an atomic absorption spectrometer. The concentration of cadmium, lead, copper, and zinc was 1.07 to 0.27 ppm, 51 to 12 ppm, 65.7 to 12.6 ppm, and 172.4 to 35.1 ppm respectively. The metal ratio Cd:Pb:Cu:Zn was 1:48:65:170. This pollution occurred more than two km from A refinery and was caused by the high stacks of the A and B refineries. The rate of cadmium compound sedimentation at Minamitomioka village in Onahama was 36 mg Cd metal/sq m, year. If the present rate of pollution continues, the heavy metal concentration in the soil would be about three times the present concentration in 10 years. The quality grade of ore and the heavy metal ratio in the soil are used to determine whether copper or zinc is a greater pollutant.

12007 APTIC NO. 29787

Eda, Shizuo, Hiroshi Ito, Hiroshi Hikichi, Sadakichi, Ejiri, Shigeo Nagayama, and Kaoru Nishiyama

INVESTIGATION OF HEAVY METAL POLLUTION IN IWAKI CITY. *(Iwaki shi ni okeru jukinzoku osen chosa). Text in Japanese. Kogai to Taisaku (J. Pollution Control), 7(4):317-324, April 1971. 15 refs.*

There are pollution problems of sulfur dioxide, heavy metals, dust, hydrogen sulfide, cyanide, mercury, and cadmium, in the Onahama industrial area. Analyses of the soil, paddy field rice, cadmium, copper, zinc, lead, and other heavy metals. Results showed that there is typical heavy metal pollution of the air which is carried by the wind. There is no need to worry about pollution of paddy fields, upland fields, and soils by factory effluents. Cadmium pollution of the soil exceeding 1 ppm is seen in only a few spots, and is considerably lower than Bandai Town, Fukushima Prefecture. A Pollution Prevention Agreement was imposed. The enterprises must comply with smoke emission standards and environmental standards and adjust their operation in accordance with meteorological conditions.

12008 APTIC NO. 29635

Ewell, T. W. and J. Piper

DESIGN OF NEW SILVER-RECOVERY INCINERATOR. *American Society of Mechanical Engineers, New York, Incinerator Div., Proc. Natl. Incinerator Conf., Cincinnati, Ohio, 1970, p. 224-234. 14 refs. (May 17-20.) (Discussion, p. 71-72.)*

A new incinerator for the recovery of silver from waste photographic paper and film is described. Its design presented several interesting problems because of the relatively high volatility of the silver halides that are recovered. The unit is capable of consuming 4500 lb/hr with a silver-recovery efficiency of over 99%. The ram-fed reciprocating grate furnace maintains steady burning conditions. The extensive temperature and pressure-control systems maintain optimum recovery conditions in th primary chamber to minimize silver losses and reduce gas volumes. A high-efficiency electrostatic precipitator removes silver-bearing particulate matter from the flue gases. The gases are quenched with atomized water sprays before the precipitator. A dry-ash collection system from both the furnace and precipitator faciliates subsequent refining operations. (Author abstract modified)

12009 APTIC NO. 29721

Ferrari, G.

PROBLEMS OF AERATION OF THE CRANKCASE OF RECIPROCATING ENGINES WITH AN OTTO WORK CYCLE. *(Problemi di aerazione del basamento dei motori alternativi a ciclo Otto). Text in Italian. Riv. Combust., 24(11):492-501, Nov. 1970. 15 refs.*

The amount of gas accumulated in the crankcase of a medium power European engine due to blowby through the gas rings was determined under a number of different running conditions. Gas composition was analyzed, and an attempt was made to explain the trend patterns of the findings by investigating blowby behavior. The harmful effects caused by these gases were then examined, including the percentage present in total air pollution, sludge formation, and condensate in the crankcase. Control of these gases calls for their recirculation by aspiration into the cylinder at the same time as the fresh air-fuel mixture. The most significant recycling systems adopted by the Italian engine builders are described, and a device is presented which offers good ventilation for practically the entire engine operating range. (Author summary modified)

12010 APTIC NO. 29781

Gils, Walter

MARKET DEVELOPMENT IN GAS ECONOMY. *(Die Marktentwicklung in der Gaswirtschaft). Text in German. Gas Wasserfach Gas Erdgas (Munich), 112(5):215-219, May 1971. (Presented at the Gasfachlichen Aussprachetagung, Wuerzburg, West Germany, 1970.)*

The natural gas consumption in West Germany in 1969 was 22.7 billion cu m/4300 kcal/cu m, an increase over the previous year of 42%. The gas supply from coking plants, remote gas supply companies, and local gas works has doubled over the past ten years. Natural gas is widely used in households and industry. Since gas heating does not contribute to air pollution, it is gaining popularity rapidly. Natural gas is also used in remote heating plants, houses, and industry (boiler plants, production plants in the cement and potassium industry, and power plants). Another further application is the total energy obtained when power is produced with the aid of a gas turbine or gas motor and where the waste heat is used for the drying processes.

12011 APTIC NO. 29643

Grant, Neville

MERCURY IN MAN. *Environment, 13(4):2-15, May 1971. 29 refs.*

Perhaps the largest quantities of mercury added to the environment by man are released with the burning of natural fuels. From available evidence it appears that U. S. coal may average between 0.5 and 3.3 ppm mercury; at present rates of coal consumption, between 275 and 1800 tons of mercury are probably being released to the air annually. The extraction and use of mercury itself is a substantial source of pollution. According to one estimate, mining, smelting, and refining operations released 170,000 pounds of mercury into the enviornment in 1965. Agricultural uses of mercury, although small compared to the total, are of concern because of their immediacy to man. Mercurial fungicides may enter the food chain in a variety of ways. Most recent concern over mercury has been focused on water pollution and the resultant contamination of fish. The conversion of inorganic mercury to organic by microorganisms has been shown. The two general classes of mercury compounds--organic and inorganic--differ greatly in the extent to which they are absorbed by the body and the degree of damage they may do, once absorbed. Methyl mercury is far more readily absorbed, and much more slowly excreted, than inorganic compounds. Mercury compounds have been shown to cause breakage and abnormal chromosome division in concentrations lower than any other known substance--as low as 0.05 ppm. The derangement of chromosomes by mercury probably depends on its interaction with sulfhydryl groups essential for normal spindle formation that directs an equal division of chromosomes into each newly formed cell. Other toxic effects of mercury are indicated as well as the behavior of mercury in the body. Levels of exposure are cited. An intake of not more than 0.03 milligram methyl mercury per day has been recommended.

12012 APTIC NO. 29627

Grosick, H. A.

AMMONIA DISPOSAL--COKE PLANTS. *Blast Furn. Steel Plant, 59(4): 217-221, April 1971. 1 ref. (Presented at the Western States Blast Furnace and Coke Plant Association Meeting, Chicago, Ill., Jan. 29, 1971 and at the Eastern States Blast Furnace and Coke Oven Association Meeting, Pittsburgh, Pa., Feb. 19, 1971.)*

The system of ammonia destruction proposed in 1958 as an alternate to sulfate production consisted of washing thee ammonia from the coke oven gas by means of water, distilling the ammonia from the water, dephlegmating the vapors to a concentration which could be burned, incineration of the vapors in a combustion furnace and venting of the products of combustion to the atmosphere by means of a stack. Certain variations are proposed as a direct result of the increased stringency of air and water pollution regulations, and in order to minimize operating difficulties and reduce initial investment and operating costs. It is recommended that the gas outlet temperature from the primary coolers by held as low as possible to minimize the amount of naphthalene remaining in the gas. It is also important that the efficiency of tar removal be maintained at a high level to minimize tar deposition in the naphthalene scrubbing system. Operation of the naphthalene scrubber without gas cooling appears to be less troublesome and less expensive than with cooling since there is little condensate to be separated from the oil and the heat transfer surface required for oil cooling is much greater than that required for water cooling in the first stage of the ammonia washer. Other variations are also cited which pertain to the ammonia washers and benzol washers. Critical operating conditions are mentioned, and pollution problems associated with ammonia destruction are discussed. Of the acid gases removed, hydrogen sulfide is of particular importance since all of the hydrogen sulfide absorbed with the ammonia will be distilled from the scrubber liquor with the ammonia vapor and burned in the combustion furnace to sulfur dioxide. Many potential customers have been concerned that the combustion of ammonia might produce an inordinantly high quantity of oxides of nitrogen. Stream pollution associated with the crude ammonia liquor and its control are also discussed.

12013 APTIC NO. 29661

Hasegawa, Toshio, Akiyoshi Sugimae, and Junko Fujii

DETERMINATION OF LEAD CONTENTS IN AUTOMOBILE EXHAUST GAS. *(Jidosha haikigasu chu no namari ni tsuite). Text in Japanese. Taiki Osen Kenkyu (J. Japan Soc. Air Pollution), 5(1):253, 1970. 3 refs. (Presented at the Japan Society of Air Pollution, Annual Meeting, 11th, Japan, 1970.)*

Lead content and size were determined for the exhaust gas from running automobiles at the speed of 10 to 70 km/hr. Dust in the exhaust gas was collected by high volume air sampler and/or Cascade Sampler. The lead content of the dust collected on glass fiber filters was determined by emission spectrochemical analysis. The content was 6300 to 6500 microg/cu m at low speed and up to 3900 microg/cu m at high speed. More than 99% of this lead dust was less than 1 micron in size. The ratio of lead dust/total dust was 23% at low speed and 83% at high speed.

12014 APTIC NO. 30027

Hawkes, A. S.

GASOLINE, LEAD AND AIR POLLUTION. *World Petrol., 42(5):142, 144, 1946, June 1971. 13 refs.*

Available evidence indicates that lead in automobile exhaust gas is not injurious to public health and that removal of lead from gasoline additives would reduce hydrocarbon emissions by only 1%. The presence of lead in gasoline is without effect on carbon monoxide emissions. Moreover, present catalytic exhaust control devices are ineffective with both leaded and unleaded gasolines. Octane requirements of unleaded-fuel cars average 6.3 research octane number (RON) higher for cars designed for regular-grade gasoline and 4.6 RON higher for premium-gasoline cars. It is also generally acknowledged that engines operating on unleaded gasoline face serious valve failure in a comparatively short period. In addition, removal of lead from gasolines will cause significant changes in the photochemical reactivity of exhaust gases by increasing emissions of partially oxidized aromatic hydrocarbons.

12015 APTIC NO. 30100

Hess, Walter

CONTROL OF OIL-FIRED HEATERS, A MODERN COMMUNAL TASK. *(Die Oelfeuerungskontrolle, eine moderne Kommunalaufgabe). Text in German. Wasser Energie, 63(5/6):193-196, 1971. 10 refs.*

The estimates concerning the contribution of domestic heaters to air pollution vary greatly. They range from one third to two thirds of the total pollution. Of the various heating systems in Switzerland, the oil-fired domestic heaters are the most widely used home heating system. Some 80 to 90 percent of the homes are oil-heated. In principle, each oil heater can be operated without pollutant emission, but most of the owners of oil heaters do nothing about proper maintenance of the burner. A simple emission monitoring method is available. The waste gas is drawn through a filter and the gray tone is determined photoelectrically. According to the guideline set up by the Swiss Commission on Air Hygiene, the following soot numbers should not be exceeded in long-term operation: soot number 3, for extra light fuel oil, and soot number 4, for medium fuel oil. These soot numbers pertain to a carbon dioxide content of at least 8 percent by volume. The waste gases must not leave any oil or incompletely burned oil fractions on the filter.

12016 APTIC NO. 30130

Heywood, John B., James A. Fay, and Lawrence H. Linden

JET AIRCRAFT AIR POLLUTANT PRODUCTION AND DISPERSION. *AIAA (Am. Inst. Aeron. Astronaut.) J., 9(5):841-850, May 1971. 44 refs. (Presented at the American Institute of Aeronautics and Astronautics Aerospace Sciences Meeting, 8th, New York, Jan. 19-21, 1970, Paper 70-115.)*

The basic physical processes determining emission levels of solid carbon and nitric oxide from jet engines are discussed, and a theory advanced for the dispersion of pollutants from the jet trail. A kinetic analysis shows that nitric oxide is formed mainly in the combustor primary zone, in regions of the flow where the equivalence ratio is greater than about 0.8, and that freezing occurs as the gas is diluted and cooled in the secondary zone. Calculated results for nitric oxide concentrations are presented and compared with existing experimental data. The mechanisms important in the formation of carbon in the fuel-rich regions of the primary zone are reviewed. The oxidation of this carbon in the remainder of the combustor is then considered, and the oxidation rates attainable within the combustor are computed from existing rate data. The dispersion of the exhaust plume is analyzed in terms of two effects: the entrainment of surrounding air due to the turbulent motion of the jet and the motion induced by the buoyancy of the trail. For short periods mixing proceeds as in ordinary wakes; for longer periods, mixing is dominated by motion induced by buoyancy. (Author abstract modified)

12017 APTIC NO. 29841

Isurugi, Shiro, Yuji Abe, Toshio Iwasaki, Toshiyuki Yosoma, and Hiroyoshi Saito

EXPERIMENTAL STUDY ON PLASTICS INCINERATION. *Text in Japanese. Mitsubishi Juko Giho (Mitsubishi Heavy Ind. Tech. Rev.), 8(2):317-324, March 1971. 3 refs.*

Although the production of plastics is increasing the growth of the petrochemical industry, it is also causing many problems as a refuse in municipal incinerators. A special electric furnace in a laboratory and a pilot plant with an incinerating capacity of 100 kg/hr were used to test plastic incineration. Optimum burning conditions occurred when combustible gases were generated by checking combustion in the primary and when enough air was supplied to incinerate the matter in the secondary chamber. The effect of temperature on combustion time and the soot generating rate was studied. Also, the amount of air supplied effected the combustion time and soot generating rate. The thermal decomposition of high density polyethylene, the effect of oxygen on the soot generating rate, the catalyzing effect of the soot generating rate on secondary furnace temperature, the smoking effect, and the effect of secondary furnace temperature on the production of nitrogen oxides were also discussed.

12018 APTIC NO. 29272

Jaske, R. T., J. F. Fletcher, and K. R. Wise

A NATIONAL ESTIMATE OF PUBLIC AND INDUSTRIAL HEAT REJECTION REQUIREMENTS BY DECADES THROUGH THE YEAR 2000 AD. *Preprint, American Inst. of Chemical Engineers, New York, 23p., Feb. 1970. 10 refs. (Presented at the American Institute of Chemical Engineers, National Meeting, 67th, Atlanta, Ga., Feb. 17, 1970, Paper 37A.)*

NTIS: BNWL-SA-3052

Accumulated energy consumption is forecast by decades for the entire United States through the year 2000 AD. In order to gain some perspective, a summary of the historical growth of the average thermal efficiency of electric generating staions is included. All energy projections traditionally start with a population estimate, while per capita energy use must also be considerd. Of note is the considerable energy release of the private motor car. For the future, the curves show a 300% increase in total energy release over that currently experienced. Long range planning of industrial siting based on predictive simulation of thermal and biochemical loadings as well as other environmental effects is indispensable to all forms of municipal and industrial operation.

12019 APTIC NO. 30017

Joensuu, Oiva, I.

FOSSIL FUELS AS A SOURCE OF MERCURY POLLUTION. *Science, 172(3987):1027-1028, June 4, 1971. 10 refs.*

One suspected source of environmental mercury pollution is mercury-containing fungicides used in treatment of grain seeds. However, the amounts used are much too small to explain high mercury contents in wildlife. A large part of the mercury found in the environment is derived from industrially produced mercury, approximately 10,000 tons/yr, most of which is discarded in waste streams. Another possible source could be fossil fuels and ores. Although the concentration of mercury in fuels is small, they are consumed at an enormous rate and must be considered as a possibly significant source of mercury release. The amount of mercury in coal is not well known. To obtain a preliminary value, 36 American coals were analyzed by a mercury vapor detector. It was concluded that 3000 tons of mercury/yr are released to the environment by the burning of coal. The upper limit of mercury released by weathering is 230 tons/yr. Detailed studies are needed to determine the distribution of mercury near power plants and other users of coal.

12020 APTIC NO. 29532

Koizumi, Mutsuo

AIR POLLUTANTS GENERATED IN INTRA-FURNACE COMBUSTION. *(Ronai nensh ni okeru taikiosen busshitsu no hassei). Text in Japanese. Japan Society of Mechanical Engineering, Tokyo, Proc. Special Symp. Air Pollution, 27th, 1971, p. 23-42. (April.)*

The generation mechanism of air pollutants formed during the intra-furnace combustion of solid, liquid, and gaseous fuels was discussed with respect to the type of combustion equipment and othe conditions. Dust containing unburned carbon is emitted as a result of solid fuel combustion, when combustion gas is used for heating, and by the combustion of liquid and gaseous fuels. Most of the sulfur content in fuel becomes sulfur dioxide during combustion. Part of the sulfur contained in the fuel is oxidized to form sulfur trioxide which, combined with water, often becomes sulfuric acid mist. The SO2 in the emission gas sometimes changes to form SO3 through atmospheric oxidation. When the combustion gas allows the formation of sulfuric acid, it causes the soot in the gas to condense into masses. These masses of soot fall onto neighboring areas. The nitrogen oxides discharged from an intra-furnace combustion device are usually nitric oxide and nitrogen dioxide. The NO is first generated during combustion and is partially transformed to NO2 as it goes through the furnace and heating device. In some combustion devices such as a cupola or diffusion flame annealing furnace which require a reducing atmosphere, the exhaust gas contains carbon monoxide and hydrogen. An incinerator discharges aluminum, aldehyde, and organic acid if the combustion temperature is not high enough. Hydrogen chloride is generated from the incineration of vinyl chloride, hydrogen fluoride from the incineration of fluorine resins or from tank furnaces of special glass, and metal compounds from the combustion accompanying metal processing or from incineration of plastics-containing additives.

12021 APTIC NO. 29948

Kremer, Hans and Ivico Skunca

STUDY OF THE COMBUSTION OF PARTLY PREMIXED LAMINAR NATURAL GAS FLAMES. *(Untersuchung des Verbrennungsablaufs bei teilweise vorgemischten, laminaren Erdgasflammen). Text in German. Gas Waerme Int., 19(3):105-111, March 1970. 9 refs.*

The formation of carbon monoxide on the axis of free-burning laminar premix and diffusion flames were approximated by a mathematical method. It was assumed that the decomposition of CO on the flame axis conforms with the length of the flame. Thus, it was possible to employ a relation for calculating the flame length which was derived for laminar free jets and which applies to diffusion flames. Assuming that the air admixed to the gas prior to combustion was a constituent of the gaseous fuel, the application of this relation was extended to the premix flames. A constant excess-air ratio gave a linear relationship between flame length, CO/decomposition, and the heat input. Also, when the excess air ratio and heat input remained constant, the gas composition did not exert any influence. These correlations were confirmed by experiments. When the relations thus derived were applied to injector burners, the change-over from one type of gas to another flame length or the decomposition of CO changed even if the burner dimensions and heat input remained unchanged. These differences were due to the change in the intake of primary air. Test gases G2O, G21, and G23 (natural gases) were used.

12022 APTIC NO. 30026

Kutuzova, L. N., V. D. Sulima, V. N. Kutuzov, and P. L. Saltan

DECONTAMINATION OF POLLUTED AIR FROM HARD PITCH PRODUCTION PLANT. *Coke Chem. USSR (English translation from Russian of: Koks i Khem.), no. 10:49-51, 1970.*

Polluted air from a pitch preparation plant was passed through a water cooler and a 100-liter trap, where it was bubbled through a layer of condensate to remove the aerosol and moisture. From the trap, the air entered a 24-liter catalytic reactor for oxidation of the residual pollutants. All catalysts investigated (bauxite, iron oxide, copper-chromium oxide) oxidized tarry matter quite effectively, including its polycyclic aromatic hydrocarbons. In addition to reducing the residual tarry matter to a few mg/cu m, the catalytic reactor lowered the waste gas temperature to 400-600 C. At these temperatures, the risk of synthesizing the carcinogenic hydrocarbons is avoided.

12023 APTIC NO. 27641

Lestz, S. S. and W. E. Meyer

COMBUSTION REGULARITY A KEY TO SPARK-IGNITION ENGINE EMISSIONS REDUCTION? Preprint, Academia R. P. R., Bucharest, 15p., 1970. 4 refs. (Presented at the Internal Combustion Engines Conference, 2nd International, Bucharest (Rumania), 1970.)

The concentration of exhaust gas contaminants fluctuates with cycle-by-cycle variations of the combustion process, at least under some engine conditions. A hemispherical piston dome and combustion chamber, overhead valves, and provisions for varying the compression ratio comprised the single-cylinder spark ignition engine utilized for this study. Exhaust gas samples were analyzed by nondispersive infrared detectors for nitric oxide, carbon monoxide, and carbon dioxide concentrations, while total unburned hydrocarbons were measured by a flame ionization detector. The air-fuel ratio, inlet pressure and temperature were not subject to cycle-by-cycle variations. Thus, the observed variations in the pressure-time histories must be related to variations in the rate at which energy is released. A schematic analog circuit for pressure and rate of pressure change signals is described, as well as a discriminator where they are compared with present values. From the viewpoint of unburned hydrocarbons, those cycles which have their maximum rate-of-heat release at approximately 8 C are the cleanest. A knock intensity scale is defined from an analysis of the rate-of-pressure variation spectrum, and it is shown that emissions are related to this knock intensity.

12024 APTIC NO. 29678

Nicholas, E. J. H. and L. Wall

ATMOSPHERIC POLLUTION IN HEADINGS FOLLOWING SHOTFIRING. *Mining Eng. (London), 130(128):509-*

518, May 1971. 12 refs. (Presented at the Mining Institute of Scotland, General Meeting, 21st, Jan. 1970, Paper 4395.)

The detonation of explosives produces toxic gases which can pollute the air. The post-firing fume cloud contains carbon dioxide, carbo monoxide, aldehydes, hydrogen, oxides of nitrogen, and water. Various factors influence the proportions of these constituents. Although no standards have been established, limiting values have been proposed, based on possible effects of intolerable irritation, chronic or irreversible tissue damage, or serious narcosis. The CO threshold limit is 50 ppm, NO2 is 5 ppm, and NO is 25 ppm. Air samples were taken during explosions in Scotland. Carbon monoxide was sampled by pumps and pressurized tubes and then analyzed by electroconductivity. Oxides of nitrogen were sampled through detector tubes which measured oxide content using colored stains. Immediately after firing, high CO values were obtained; they rapidl diluted but were slow to completely dissipate. Nitrogen dioxide reached a peak of 30 ppm, six times the ceiling limit, at a 300 ft outbye of the face of a moderately well-ventilated coal and stone heading. Nitric oxide was not evaluated separately. The total nitrogen oxides were persistent and were of high levels. Several factors of detonation can affect the production of gases including type and quality of stemming; diameter of charge; channelling effect; condition of shothole; correctness of shothole charging; an defects in detonation technique. Water sprays may be able to lower pollution levels.

12025 APTIC NO. 28968

THE INDUSTRIAL FIRING SYSTEMS OF THE 1970'S. *(Die Industriefeuerung der 70er Jahre). Text in German. Tech. Mitt. 64(3):82-83, March 1971.*

In 1960, industrial furnaces were fired up to 22% by mineral oil and to 0.4% by natural gas. Between 1960 and 1969, mineral oil consumption rose to 51%, natural gas to 4%. From 1969 to 1980, the percentage of mineral oil-fired furnaces will rise to 60%, that of natural gas to 10%. The type of fuel used does not markedly change the problems of dust and gaseous pollutants generated by such industrial furnaces. Development in the last few years have shown that through efficient control of the combustion process, sulfur trioxide which is due to the use of heavy-fuel oil can be reduced. In West Germany, efforts are underway to follow the example of Scandinavia and reduce the maximum permissible dust concentration in the waste gas to 100 mg/cu m flue gas.

12026 APTIC NO. 29547

Nowak, F.

CONSIDERATIONS IN THE CONSTRUCTION OF LARGE REFUSE INCINERATORS. *American Society of Mechanical Engineers, New York, Incinerator Div., Proc. Natl. Incinerator Conf., Cincinnati, Ohio, 1970, p. 22-28, 86-92. (May 17-20.)*

Refuse burning reduces waste volume but also causes air pollution. Incinerators must filter or wash the dust-laden exhaust gases in order to comply with regulations concerning the maximum level of atmospheric pollution. In West Germany, 150 mg/cu m of dust is permitted in the cleaned gas. During the washing process, large quantities of pollutd water are produced that can be dangerous to the sewerage system and neighborhood. Filter temperature cannot exceed 300 C, so water sprays, fans, or preferably boilers can be used to reduce flue gas heat. Flue gas and dust can cause corrosion at various tube areas in the incinerator. Various changes can be made to reduce this hazard, such as widening tubes, lowering flue-gas velocity, and using blowers to avoid fouling. Heating surfaces can also corrode and so far additives have failed to eliminate this problem. Therefore, dangers are minimized by maintaining optimum firing conditions. Various plastic refractory linings have also been developed. Using the refuse heat content reduces the operating cost of the facility. Two pilot incinerators were used in Stuttgart.

12027 APTIC NO. 29894

Oelert, H. H.

VEHICLE EMISSIONS. *J. Inst. Petrol. (London), 56(552):334-340, Nov. 1970. 12 refs.*

Government legislation and control measures taken by the automobile industry in Germany are reviewed and a survey of research on vehicle emissions is presented. Since July 1969, passenger cars may not exceed a carbon monoxide concentration of 4.5% by volume during idling. Stricter standards are expected. Control measures adopted by industry include crankcase gas feedback, carburetor modifications such as preheating, dash pots for deceleration, and special devices such as variable cross-sections for the air inlet and separate fuel-air mixers for deceleration. Other improvements are the injection of secondary air into the exhaust manifold and afterburners for the Wankel motor. Test procedures and analytical methods to study exhaust components are being developed with emphasis on nitrogen oxides. Future work will concern development of tests for diesel-engined trucks, evaluation of nitrogen oxides, the possibilities of cleaner working engines, catalytic combustion of exhausts, and study of irritating trace components and emissions reactions.

12028 APTIC NO. 29662

Okita, Toshikazu and Ikuo Watanabe

QUALITATIVE ANALYSIS OF EXHAUST GAS FROM FISH MEAL PLANT. *(Gyochokotsu kojo endo gasu no bunseki). Text in Japanese. Taiki Osen Kenkyu (J. Japan Soc. Air Pollution), 5(1):98, 1970. (Presented at the Japan Society of Air Pollution, Annual Meeting, 11th, Japan, 1970.)*

The exhaust gas from a fish meal plant was absorbed in cold isopropanol and separated by gas chromatography. Each fraction was determined with infrared analysis and mass spectrometry. Oxygen, nitrogen, carbon dioxide, isobutene, 1,3-butadiene, 1-pentene, methyl mercaptan, isopropyl nitrite, and water were determined.

12029 APTIC NO. 29599

Okuno, Toshihide, Masahiko Tsuji, and Kokei Takada

PROBLEMS OF PUBLIC NUISANCE CAUSED BY BAD ODORS IN HYOGO PREFECTURE. *(Hyogo kenka ni okeru akushu kogai no mondaiten). Tex in Japanese. Hyogo Prefecture, Kobe (Japan), Environmental Science Inst., Rept. 2, p. 18-24, Feb. 1971.*

Hyogo factories which generated bad odors included fish bone and waste treatment plants, oil and fat manufacturing, petroleum refineries, nitrogenous superphosphate of lime manufacturing plants synthetic resin processing plants, and sewage treatment plants. The odorants were amine ammonia, low fatty acids, sulfur compounds, including mercaptan and hydrogen sulfide, olefin, paraffin hydrocarbons, and polycyclic aromatics. In a nitrogenous superphosphate of lime fertilizer manufacturing plant, most odors were produced during the processing stages where the nitrogenous superphosphate of lime completely matured in the reactor, was taken out, was carried over to the dryer by a belt conveyor, and was dried. The odorants of the matured superphosphate of lime in the stock room were aldehyde (0.04-0.63 ppm) and amine (0.004-0.252 ppm). The quantity of the aldehyde and amine varies with the amount of ammonium sulfate added and with the heating temperature. When measured under weather conditions of 15 C and wind velocity of 1-2 m/sec, the density of the aldehyde was 50-200 ppb at a spot 500 m away and 240-460 ppb 100 m away, while the amin was 100-150 ppb and 150-210 ppb respectively. The lowest odor producing density was 0.066 ppm for acetaldehyde and 0.7-0.4 ppm and 1.0-0.8 ppm for n-butylamine. Thus, the odor can be smelled as far away as 1400 m, depending on weather conditions. A fish bone and waste processing plant and a synthetic resin processing plant were similarly studied. Since the odor-producing substances are discharged at various stages of the production process, it is difficult to lead all the odorants into an odor treatment device. It is also economically impractical to seal or encase the entire building and then treat all the air in the building. The lowest odor producing density of the odorants is very low, indicating the technical difficulty of the deodorization. Also, it is doubtful that the problem can be solved by increasing chimney height. A possible solution is a sealed plant equipped with both a continuous scrubber to wash the exhaust gas and chemical treatment or a Cottrell system.

12030 APTIC NO. 29842

Okuno Toshihide and Masahiko Tsuji

SOME PROBLEMS ON THE OFFENSIVE ODOR IN HYOGO PREFECTURE. *(Hyogo-kenka ni okeru akushu kogai no mondaiten). Text in Japanese. Hyogo-ken Eisei Kenkyusho Kenkyu Hokoku (Rept. Environ. Sci. Inst. Hyogo Prefect.), no. 2:18-24, March 1971.*

Problems of odor pollution Hyogo Prefecture were investigated. The composition of the offensive odor was roughly classified into amine and ammonium compounds, fatty suboxides, mercaptan sulfur compounds such as hydrogen sulfide, olefinic and paraffinic hydrocarbons, polycyclic aromatic compounds, and other organic acids. The chief sources of the offensive odor were fish processing factories, factories using nitrogen-containing superphosphate of lime, and factories producing synthetic resins. It is difficult to introduce the components of the offensive odor into the disposal equipment. A closed system to treat the exhaust gas by continuous washing should be employed. Absorption, burning, and pharmaceutical treatment are additional control techniques.

12031 APTIC NO. 29572

Paluch, Jan and Stanislaw Karweta

AIR POLLUTION BY LEAD AND ZINC IN THE AREA OF COMBINED METALLURGICA WORKS AND ITS INFLUENCE ON VEGETATION AND SOIL. *(Die Luftverunreinigung durch Blei und Zink im Bereich eines metallurgischen Kombinates und ihr Einfluss auf Vegetation und Boden). Text in German. Wiss. Z. Humboldt Univ. Berlin Math. Naturw. Reihe, 19(5):495-497, 1970.*

A study was made for over three years in the area of a large non-ferrous metals plant that started operations in 1966, and which was located in a formerly very clean wooded area. Its production includes zinc oxide and lead; by-products include sulfuric acid and ammonium sulfate. The zinc oxide melting furnaces emit about 30 tons of gas per month, containing about 50% zinc plus lead. Additional quantities of zinc and lead dust in the air originate from the charging of the furnaces with powdered raw material, from transportation and handling of scrap material, from the sintering plant for zinc-lead ores, and from the shaft furnace in which the metal oxides are reduced to metals. A distinct increase in dust fall and air pollution in the areas adjacent to the plant was observed, reaching a peak two years after start of operations, and then leveling off. Emission of zinc and lead-bearing dust into th air was found to cause an accumulation of these metals in the soil and in plants, the accumulation in the soil was observed only in the surface layers. The emission of zinc and lead from the melting units takes place mainly in the form of oxides which are emitted together with considerable quantities of calcium oxide. The accumulation of these three metal groups leads to soil alkalinity. The process of assimilation of zinc and lead in plants is far more intensive than in the soil.

12032 APTIC NO. 27292

Pickwell, George V.

THE PHYSIOLOGY OF CARBON MONOXIDE PRODUCTION BY DEEP-SEA COELENTERATES: CAUSES AND CONSEQUENCES. *Ann. N. Y. Acad. Sci., 174(1):102-115, Oct. 5, 1970. 23 refs.*

Coelenterates of the order Siphonophora are known to occur in considerable numbers in productive near-shore areas of much of the world's oceans. Among the Siphonophora, two suborders, the Cystonectae and Physonectae posses gas-filled floats, or pneumatophores, that are inflated by carbon monoxide. Because of the floats and the additional feature of expulsion through an apical pore in the float of bubbles resulting from expanding gas during migration, the physonect siphonophores constitute important biological targets for acoustic echo sounders. They further contribute to an as yet undefined system of dissolved CO in the sea, with possible implications for atmospheric pollution. Experimental data are presented on siphonophore float dimensions and volumes, float elasticity, rate of oxygen consumption, and CO production of the pneumatophore alone, and oxygen consumption of intact siphonophores. Related parameters having to do with the supply and utilization of energy and gas are also examined. Physonect siphonophores can survive a partial pressure of CO equivalent to 45 atm. The siphonophore floats transmit CO to the surrounding water by diffusion, but they are unlikely to be the source of high surface CO values.

12033 APTIC NO. 29542

Ravet, R.

ABOUT THE PROBLEM OF REPRESENTATIVE SAMPLING IN THE CASE OF WET SANDBLASTING. *(Sur le probleme des prelevements representatifs dans le cas du decapage par jet de sable humide). Text in French. Lab. Central des Services Chimiques de L Etat, Paris (France) and Inst. National de Securite pour la Prevention des Accidents du Travail et des Maladies Professionnelles, Paris (France), Colloq. Securite Sociale Serv. Prevent., 3rd, Paris, France, 1955, p. 102-104. (Nov. 3-5.)*

A wet sandblasting system was investigated by determining dust content at breathing height in the area of the operator, in order to evaluate silicosis risks to the operator. To obtain average or comparable results, three types of apparatus were used: an A.R.M. set, a conimeter, and an impinger. Samples were alternately taken with the nozzle in horizontal and vertical spray positions. The test results obtained from the A.R.M. apparatus were a multiple of those based on the other two methods. The A.R.M. method was found unsuitable for dealing with wet particles. The order of magnitude derived from the other two methods was 500,000 particles of less than three microns per liter. Based on an average content of 33% free silica in the dust material, this condition would be classified as harmless for the operating personnel. However, allowing for the uncertainty of any of the results obtained, and considering that wet particles may bounce back from the wall onto the workers, operators should continue to wear protective masks.

12034 APTIC NO. 30032

Reigel Stanely A. and Charles D. Doyle

OPERATING EXPERIENCE OF EVAPORATIVE COOLERS SERVING CUPOLAS AIR POLLUTION CONTROL SYSTEMS. *Environ. Control Safety Management, 141(6):28-30, June 1971. 3 refs.*

Becuase normal off-gas temperatures from gray iron cupolas can reach 2000 F, a considerable amount of gas cooling is required to protect subsequent air pollution control equipment and ductwork. Of available cooling methods, evaporative cooling, in which a fine spray of water is injected into the hot gas stream with a resultant volume and temperature decrease, appears the most attractive economically. However, as demonstrated by field inspections, the advantages of evaporative cooling can be offset if small orifice hydraulic nozzles are used. These nozzles are subject to rapid wear and to degradation of atomization characteristics, the latter resulting in water carryover to the ductwork system. Both problems are eliminated by using large orifice gas-assisted nozzles.

12035 APTIC NO. 29734

Schiantarelli E. F.

EMISSION OF AIR POLLUTANTS FROM AIRCRAFT JET ENGINES. *(Luftfremdstoffemission von Flugzeugstrahltriebwerken). Text in German. Schweiz. Bauztg., 89(2):35-41, Jan. 1971. 20 refs.*

Since the introduction of jet driven aircraft in 1958, the composition of the waste gases has been the subject of continuous tests, mostly in the U.S.A. and in Switzerland. The smoke trails observed during start-up and landing are included in these investigations, which concentrate on three questions, namely a) which pollutants are being emitted by jet engines; b) do the waste gases contain noxious components; and c) in what quantities are air pollutants generated and how do they compare quantitatively with the emissions originating from automobiles, industry, and households Combustion in jet engines takes place with a high percentage of excess air, and more than 99% of the fuel is completely burned. A fraction of one percent only of the used fuel leaves in the form of incompletely burned waste, most of which is composed of carbon particles which cause the opacity of the exhaust trail. The concentrations of nitric oxide, carbon monoxide, and hydrocarbons are extremely low, and practically negligible in comparison with exhaust emissions from automotive vehicles. A five months study conducted in 1967/68 by the U.S.A. National Center for Air Pollution Control in the areas of three airports at Washington, D. C. revealed that all aircraft combined, i.e., propeller and jet type, contributed about one percent to the overall concentration of solid aerosols and hydrocarbons in the air, and less than one percent of the carbon monoxide and nitric oxides. Piston type engines emit much carbon monoxide, whereas the jet engines participate chiefly in the emission of carbon particles.

12036 APTIC NO. 29519

Schwarz, Karl

THE INFLUENCE OF ENVIRONMENTAL PROTECTION ON PLANNING, OPERATION AND ECONOMY OF STEAM POWER PLANTS. I. MAINTENANCE OF CLEAN AIR. *(Einfluss des Nachbarschutzes auf Planung, Betrieb und Wirtschaftlichkeit von Dampfkraftwerken. Teil 1: Reinhaltung der Luft). Text in German. Tech. Ueberwach. (Duesseldorf), 12(4):106-112, April 1971. 29 refs.*

Steam power plants emit solid matter such as fly ash and soot, and gases such as sulfur and nitrogen oxides, hydrocarbons, and fluorine compounds. The VDI guideline 2091 limits dust emissions of power plants with a capacity of 70,000 cu m/hr to 150 mg/cu m dry flue gas volume. Only electrostatic precipitators achieve this value in the cleaned gas. For heavy fuel oil, soot emissions are limited to a smoke shade 3, which is to be measured by the Bacharach filter paper method. The VDI commission has worked out a limit value for soot according to which not more than 70 mg soot may be emitted/cu m solid matter (oil, coke, etc.). During soot blowing, not more than 200 mg/cu m may be emitted. Over the entire operating period, not more than 1.5 g soot/kg oil may be emitted on the average. For soot collection, centrifugal separators are widely used. Of the gaseous pollutants from steam plants, sulfur dioxide is the most important. Since no efficient flue in gas desulfurization process is yet available, efforts are under way to obtain low-sulfur fuel oils. No measurements have yet been taken of the gaseous fluorine compounds emitted by steam boiler plants. It is assumed that most of the fluorine is bound to alkaline ash components. The nitrogen dioxide emission has been limited to a long-term maximum allowable concentration of 1 mg/cu m. Cooling towers 100 m high and more are emitters of droplets which contaminate the environment. In some power plants, droplet separators have been installed with great success.

12037 APTIC NO. 29876

Scott, David

AMAZING HOT-GAS ENGINE POWERS CLEAN-AIR BUS. *Pop. Sci., 198(6): 54-56, June 1971. 1 ref.*

A description is given of a highly sophisticated version of the Stirling hot-air piston engine. Built in Holland, the engine is a four-cylinder 200-hp unit designed to power buses. Unlike gasoline or diesel engines, the Stirling is an external combustion engine, so there are no power stroke explosions to foul air with carbon monoxide or unburned hydrocarbons. In addition, it has a virtually flat torque throughout the speed range, and is vibration-free. The engine is unaffected by dust, is an easy cold starter, and neither consumes nor contaminates lubricating oil. Each of the 4 bus engine cylinders has two pistons, a fixed volume of gas, and a hot end and a cool end interconnected by a pipe. The upper piston is a displacer, the lower piston is the power piston. Gas heated by continuous combustion in a hot-walled chamber expands smoothly throughout the piston strokes. Work is underway on a second-generation design suitable for cars. This engine will have four pistons and no displacer.

12038 APTIC NO. 29526

Sletmoe, G. M.

THE CALCULATION OF MIXED HYDROCARBON-OXYGENATED SOLVENT EVAPORATION. *J. Paint Technol., 42(543):246-259, April 1970. 18 refs. (Presented at the Federation of Societies for Paint Technology, Annual Meeting 47th, Chicago, Ill., Nov. 6, 1969.)*

A hypothesis regarding the evaporation of hydrocarbon-oxygenated solvent blends from paint films is derived theoretically, justified experimentally, and generalized to a usable routine consisting of three steps: a quantitative calculation of rate and balance in the initial neat solvent evaporation; a qualitative extension of this to the entire neat solvent evaporation; and guidelines for relating neat solvent evaporation to evaporation from the fully formulated paint film. A generalized system of escaping coefficients is provided for this calculation. (Author abstract)

12039 APTIC NO. 29698

Smoyer, John C., Donald E. Shaffer, and I. Lee DeWitt

A PROGRAM TO SAMPLE AND ANALYZE AIR POLLUTION IN THE VICINITY OF A CHEMICAL RECLAMATION PLANT.

Inst. of Environmental Sciences, Mt. Prospect, Ill., Proceedings of the Institute of Environmental Sciences Annual Technical Meeting, 17th, Los Angeles, Calif., 1971, p. 339-345. 5 refs. (April 26-30.)

A preliminary survey of the air pollution in a valley surrounding a reclamation plant was requested by the State of Maryland, which had been receiving complaints from local residents about unusual odors and illnesses for several years. The odors appeared strongest near the plant, which processes mixtures of liquid solvents. Although the odors appeared complex in nature, they could be classified in two general categories: a highly disagreeable and nauseating odor; and an ethereal, or fragrant, odor characteristic of some ketones and alcohols. Air samples were obtained in stainless steel tubes and transported back to the laboratory for analysis. Pollutant concentrations were determined in a Hewlett Packard Model 810 Research Chromatograph equipped with a dual flame ionization detector head. The pollutants were identified by infrared and mass spectrometry. At least 16 compounds, not including carbon monoxide, nitrogen, and water vapor, were detected in the valley air during four sampling periods. The highest concentration detected was 94 ppm of methyl ethyl ketone. (Author summary modified)

12040 APTIC NO. 29127

Stacey, M. J.

OIL REFINERS PREPARE FOR ANIT-POLLUTION CONTROLS.

Chem. Process Eng., 52(3):63, 65, 67, 69-70, March 1971.

Oil refineries are using many processes to reduce pollution in two areas--sulfur dioxide and particulate pollution from industrial and power generation installations, and the more complex pollution caused by motor vehicles. Fuel oils cause about 15% of all atmospheric SO2 pollution, as well as pollution caused by inccompletely-burned hydrocarbons, nitrogen oxides, and partial oxides of other oil contaminants. These pollutants are eliminated simultaneously by the processes of vacuum distillation, visbreaking (a modern thermal cracking process), and hydrogenation. Although medical research shows little evidence for the elimination of lead from gasoline, it has become a target for anti-pollution campaigners. The alkylation processes, which produces a high-grade gasoline blending stock from refinery gases, is likely to replace the use of lead alkyls to improve octane rating. Because European gasoline taxes are high, they encourage production of high-octane fuels. Thus, cracking processes such as polymerization and its modern counterpart, alkylation, will be increasingly used to produce gasolines of higher octane ratings which can also be blended with lower octane fuels. Although aromatic compounds also have high octane ratings, they produce unburned hydrocarbons. Afterburners can be used to limit hydrocarbon emissions.

12041 APTIC NO. 29827

Sugishima, Wasaburo

RECENT TREND AND PROBLEMS OF INDUSTRIAL WASTES TREATING EQUIPMENT.

Text in Japanese. Mitsubishi Juko Giho (Mitsubishi Heavy Ind. Tech. Rev.), 8(2):325-331, March 1971. 4 refs.

With the expansion of industrial production, the volume of industrial wastes is increasing, in spite of improvement in the recovery rates of production systems. The control of public hazards is becoming severer so that environmental sanitation may be secured. Dumping places are strictly restricted. Under such circumstances, the most important steps to be taken for the treatment of industrial wastes are making them harmless and reducing their volume. However, it is difficult to design equipment because it is difficult to handle various kinds of industrial wastes with large variations in viscosity and residuum Also, sufficient consideration must be paid to the generation of corrosive or noxious gases. Crushing machines and incinerators are described to introduce the problems of industrial waste treating equipment and to emphasize the necessity of system engineering for composite industrial waste treatment centers. The kinds of wastes, weight of wastes, and the ratio of plastics in dry refuse are also discussed.

12042 APTIC NO. 29538

Tada, Osamu

NITROGEN OXIDES ANALYSIS.

(Chisso sankabutsu bunseki no igi). Text in Japanese. Preprint, Japan Society of Analytical Chemistry, Tokyo, 2p., 1971. (Presented at the Nitrogen Oxides Conference, 3rd, Tokyo, Japan, Jan. 22, 1971.)

A memorandum of a lecture on the significance of the analysis of nitrogen oxides is presented. It includes substances contained in the nitrogen oxides group, the generation and the source of nitroge oxides, the influence of nitrogen oxides on the human body, and the permissible concentration of nitrogen oxides and their environmenta standard. Compounds contained in the nitrogen oxides group are dinitrogen monoxide, nitrogen monoxide, nitrogen dioxide, nitrogen sesquioxide, and dinitrogen pentoxide (nitric acid). The ratio of nitrogen monoxide to nitrogen dioxide generated from the source is important. The nitrogen monoxide/nitrogen dioxide ratio is: oxyacetylene flame (0.92), carbon arc (0.91), combustion of celluloid (0.10), exhaust fume of Diesel engine (0.65), dynamite gas (0.48), and the gas generated from metals treated by nitric acid (0.22). The concentration of nitrogen oxides from several sources was reported (1961-1962): smoke from firewood stove (nitrogen dioxide; 2-9 ppm and nitrogen monoxide; 10-130 ppm), coal stove smoke (1-16 and 2-670), oil stove (0-1 and 1-7), bath gas boiler fume (1-7 and 36-118), auto exhaust gas at the outlet port (1-3 and 28-124, fume of diesel engine (420-500 and 0-35) and tobacco smoke (20-187 and 15-300). Nitrogen monoxide, nitrogen dioxide, and dinitrogen pentoxide are the objects of an argument on physical influences.

12043 APTIC NO. 29534

Tahara, Takeshi

COMBUSTION OF WASTE OIL FROM COAL.

(Sekitankei haiyu no nensho). Text in Japanese. Netsu Kanri (Heat Management: Energy and Pollution Control), 23(4):19-26, April 1971.

A supplemental fuel of waste oil or residual oil is used for boilers in a coal tar processing plant. Such use of the waste oil aims at fuel economy and the reduction of sulfur oxide emissions. The properties of the waste oil and how it can be effectively utilized as a fuel oil are discussed. Distillate oils from coal tar include 1% light oil, 3% carbolic oil, 13% naphthalene oil, 6% treated oil, 21% anthracene oil, and 56% pitch. The residual oils obtained after extracting the useful contents from these distillate oils are properly blended and used as the fuel oil. Characteristic of this fuel oil include a practically neutral reaction, a wide range of flashing points from 40-140 C and a varying point of fluidization. Elementary analysis reveals that the fuel oil contains more carbon but less hydrogen than petroleum heavy oil, thus giving a C/H ratio of 16 as compared to 8 for petroleum heavy oil, 0.5% or less sulfur content, and up to 5% water content. The calorific value is 10% lower than that of petroleum heavy oil. The specific gravity varies; some are heavier than water and others are lighter. The pre-combustion heating temperature depends on the viscosity, point of fluidization, and flashing point and ranges from 80 to 135 C for the oil containing a lot of pitch. Gum resins are formed and become separated when mixed with carbon in heavy oil, sometimes resulting in operational trouble. The burner tip ca be eroded or corroded with powder coke and tar acid. The blended oil from such pitch-free and highly dissolving oils produced from coal tar such as anthracene oil, treated oil, and carbolic oil blend well with carbon heavy oils at any mixing ratio. However, mixed with medium or soft pitch oil, sludge or gum resin are produced. The mixing ratios of carbon heavy oil, medium pitch, and pitch-free oil extracted from tar were studied to find the allowabl range for the blended combustion. Various aspects of combustion were also examined. Favorable results were obtained from the injection of an additive into the boiler furnace.

12044 APTIC NO. 29984

Tatsukawa, Ryo

A NEW ENVIRONMENTAL POLLUTANT - POLYCHLORINATED BIPHENYLS (PCB). *(Atarashii kankyo osen busshitsu - Enka jifeniiru (PCB)). Text in Japanese. Kogai to Taisaku (J. Pollution Control), 7(5): 419-425, May 1971. 22 refs.*

The new environmental pollutant, Polychlorinated biphenyl (PCB) is discussed as to its physical and chemical properties, physiological effects and toxicity, actual cases of pollution, and analysis methods. PCB is a biphenyl whose hydrogen has been substituted by chlorine. It comes in various forms of chlorine compounds (theoretically 210 kinds in all) such as mono-, di-, tri-, tetra-, penta-, hexa-, hepta- and decachlorobiphenyls, each of which also comes in a number of variations. Many PCB products are commercially available. PCB is chemically inert, so that it does not react with acid, alkali, or water and is insoluble in water. It does dissolve well in organic solvents and never dries even when exposed to air after being shaped like a film. Also, PCB is thermoplastic and incombustible except with low chlorine compound content. It adheres well to smooth metal surfaces and glass and will not corrode them, even at high temperature. Highly heat insulating and super dielectric, PCB has a wide range of applications. The most popular use is as a transformer and capacitor oil; also it is used as a coating for electric wire, insulators, and carbon resistors. When mixed with asphalt and ethylcellulose, PCB forms a protective coating for lumber, metal, and concrete; it also can be mixed with paint and varnish. Another use is as an additive for natural and synthetic rubber, floor tile, printing ink, and brake linings. While its toxic effect is chronic rather than acute, PCB s toxicity on fish is less than DDT. Lichtenstein and other countries report its toxicity is 1/8000 1/1000 compared with Dieldrin and 1/300-1/30 compared with DDT. Marine pollution by PCB and its effect on fish and other living things is described to show its chronic effect. Cases of Chloracne a skin disease, have been caused by PCB.

12045 APTIC NO. 30072

Taubert, Heinz, Lutz Wenige, and Guenther Herrmann

THE EMISSION AND IMMISSION CONDITIONS OF THE POWER PLANTS IN THE BOEHLENER AREA. *(Die Emissions- und Immissionsverhaeltnisse der Kraftwerke im Boehlener Raum). Text in German. Energie. Tech., 21(4):169-175, April 1971. 6 refs. (Presented at the Lufthygienischen Kolloquium, 2nd, Karl-Marx-Stadt, East Germany, May 1970 and at the Institut fuer Kraft Werke (KDT) Vetschau, Oct. 10, 1970.)*

Of the 17 boiler furnaces presently operated in the Boehlener area, only eight are equipped with electrostatic precipitators. The population of the surrounding villages is exposed to heavy dust emissions. The dust emission of the furnaces without electrostatic precipitators reaches 13.7 g/cu m, the sulfur dioxide emission reaches a maximum of 0.320 kg/sec. All 17 boiler furnaces presently emit 13.0 tons of dust/hr from 10 stacks. The replacement of all boiler furnaces without satisfactory waste gas cleaning systems with new ones is planned. A new 300-m high stack will be erected, with a total dust emission of 1450 tons/month. The maximum dust sedimentation in the 2 km section will be 22 g/sq m/month. The present 45 m high stack produces 7200 g/sq m/month. A similar reduction of SO2 emission can be achieved by the 300 m stack. The emission maximum is reduced by 25% for an 80 m high stack. The first group of boiler furnaces will be taken out of operation in 1971.

12046 APTIC NO. 29516

Urlaub, A.

THE EXHAUST GAS COMPOSITION AT THE FM GASOLINE ENGINE. *(Ueber die Abgaszusammensetzung beim FM-Benzinmotor). Text in German. Automobiltech. Z. (Stuttgart), 73(4):115-121, April 1971. 3 refs. (Presented at the VDI-ATG Tagung, Mannheim, West Germany, Oct. 1970.)*

The carbon monoxide emission of the FM engine is far below the maximum allowable concentration in California--130 g CO/kg fuel referred to lamda equals 1. Hydrocarbon emissions from FM engines were measured with both a flame ionization detector and an infrared analyzer. Again with reference to California standards, the hydrocarbon emissions were far below the allowable maximum value of 8.5 g CH/kg fuel in almost all operating ranges. By curtailing the air intake in FM engines, a further hydrocarbon reduction is achieved. Emissions of nitrogen oxides from FM engines are comparable to those of diesel engines and lower than those of Otto engines. On the average, 15 to 20 nitric oxide kg fuel are emitted at lamda equals 1. The maximum allowable NO emission will be reduced in California to about 7.5 g NO/kg fuel beginning in 1974. This limit is not yet met by FM engines. By delaying combustion, the NO emission can be reduced from 20 g NO/kg fuel to 10 to 15 g NO/kg fuel. While this will increase CO emissions, they will remain below the California limit. Hydrocarbon emissions will also rise but not above the set limits. FM engines operate smoothly on lead-free or low-lead gasolines.

12047 APTIC NO. 29620

Willis, G. H., J. F. Parr, and S. Smith

PESTICIDES IN AIR. VOLATILIZATION OF SOIL-APPLIED DDT AND DDD FROM FLOODED AND NONFLOODED PLOTS. *Pesticides Monitoring J., 4(4): 204-208, March 1971. 7 refs.*

A mixture of 42% dichloro-diphenyl-trichloro-ethane (DDT) and 16% dichloro-diphenyl-dichloro-ethane (DDD) was incorporated into Commerce silt loam to a 6-inch depth and also surface-applied to achieve an average concentration of 42.3 ppm of DDT and 16.2 ppm of DDD. Atmospheric concentration gradients and cumulative recovery for each pesticide were then monitored continuously for 6 months at 10 and 30 cm above the water or soil surface of uncropped, flooded and nonflooded plots. Within the first 2 days the atmospheric concentration of DDT at 10 cm dropped from a maximum value of 1977 to 58 ng/cu m above the flooded plot and from 2041 to 100 ng/cu m above the nonflooded plot, while corresponding levels of DDD decreased from 405 to 30 ng/cu m and from 575 to 92 ng/cu m, respectively. Concentrations at 30 cm were comparatively lower throughout the study, denoting the existence of concentration gradients which were easily characterized. Except for the first few days following application, pesticide concentrations at either height seldom exceeded 100 ng/cu m. Subsequent changes in the atmospheric concentration of the pesticides appeared to be related to climatological factors. The higher atmospheric concentration and cumulative recovery of DDT compared with DDD apparently reflected the relative amounts of each pesticide in the original mixture, although other possibilities are discussed. It is evident that the flooding treatment effectively retarded the volatilization of both pesticides. (Author abstract)

12048 APTIC NO. 29936

Yamamoto, Takeo, Konosuke Nishida, Takashi Suzuka, and Tsuneo Honda

ON COMPOSITION AND LEAD CONTENT OF COMMERCIAL GASOLINE.

(Shibai gasorin no sosei to enganryo ni tsuite). Text in Japanese. Preprint, Japan Society of Civil Engineers, Osaka, Kansai Branch, 2p., 1971. (Presented at the Japan Soc. Civil Engineers, Osaka, Kansai Branch, Annual Meeting, May 9, 1971, Paper 11-57.)

A study was conducted to determine if commercial gasoline contains more aromatics than before to compensate for decreased octane value resulting from reduction of the lead content in the fuel. If this is so, benzene, formed as a result of cracking or decomposition of heavy aromatics and similar unburnt substances, will increase to cause air pollution. The test samples were collected from 120 gasoline stands selected at random from among 400 located in Kyoto in July 1970 and Feb. 1971. The samples were collected at two different times to compare the lead content before the industry s voluntary control of lead content with that after voluntary control An atomic absorbency spectrometric analyzer was used for analysis of the lead content and a gas chromatograph for aromatic content. According to the gas chromatogram obtained, the two samples contained an extra-large amount of toluene indicating that some commercial gasolines have added thinner, organic solvent, or white oil. These two samples were sold at very low prices. Those found to contain benzene in excess of 5% weight, the regulatory criterion, accounted for 25% of the total number of samples. The TEL-converted value of the lead content indicated practically the same average value for all the manufacturers but one. The average value was somewhat lower than the JIS specification (0.79 ml/l). Some samples from the same manufacturer showed a lead content value of only 1/2-1/6 the average value for the same manufacturer. This causes some question as to product uniformity. All samples collected after commencement of the voluntary control showed less lead content than before. Results indicate an upward trend of aromatic content to secure a high octane value in line with the decreasing lead content of commercial gasoline.

12049 APTIC NO. 29979

Yamamoto, Takeo

TREATMENT OF MUNICIPAL TRASH BY SANITATION TRUCK.

(Seisosha ni okeru toshijinkai no shorisochi). Text in Japanese. (Yokoyama Kogyo K. K. (Japan)) Japan. Pat. Sho 39-11123. 2p., June 19, 1964. (Appl. Feb. 19, 1963, claims not given).

The sanitation truck described automatically cleans streets and incinerates the collected trash while operating in the municipal area. The truck is a kind of vacuum car combined with an incinerator. An air pump is installed at the extreme rear of the truck chassis. A trash suction pipe with a flexible suction port unit opens under the front bumper. The suction pipe leads to the separator where trash and dust are retained and fed through the bottom of the separator into a crusher where they are reduced to smaller sizes necessary for complete combustion. The crushed trash is then passed to the incinerator. Ash produced by the incineration is dropped into the ash retainer tank provided under the truck chassis. Suction of the trash into the system and its transport to the incinerator are powered by the air pump. High temperature exhaust gases are emitted from the incinerator and led into the dust collector also by the suction force of the air pump. The separator, the crusher and the suction pipe are all encased so that the exhaust gas may flow through the hollow space formed between the external surface of the pipe or the casing and the inner surface of the covering. The exhaust gas is thus discharged from the dust collector and blown into the hot gas channel provided to heat the separator, the crusher, and the suction pipe, in order to prevent them from being clogged with moist dust. The gas that exchanged heat is collected through the gas discharge pipe into the wet-type dust collector where it is scrubbed with water for purification before discharge.

12050 APTIC NO. 29935

Yanagihara, Shigeru

COUNTERMEASURES ON AUTOMOBILE EXHAUST GAS.

(Jidosha no haishutsu gas taisaku). Text in Japanese. Kikai Gijutsu Kyokai Kaiho (Trans. Assoc. Mech. Tech.), 21(6):197-205, Dec. 1969. 5 refs.

The number of automobiles in Japan, especially in large cities, increased rapidly in recent years. Effective Sept. 1967, the carbon monoxide concentration average was set at less than 3% at the maximum, under a 4-mode driving condition, applicable to all new automobiles except light cars. It is desirable to lower the emission of nitric oxide and hydrocarbon, but their effect on oxidants and eye irritation is not clearly understood. The HC/NO ratio is an important factor in oxidant production, and a decrease in NO may cause an increase in oxidants. The relationships among NO, NO2, HC, SO2, and sunlight also require further study. A decrease in CO is relatively simple to achieve, but a decrease in NO and in the generation of harmful substances from photochemica reactions is more important. A table comparing the type of engines and their emission of HC, CO, and NO is given.

12051 APTIC NO. 29568

Zielinski, M., M. Zamfirescu, and M. Decusara

AIR POLLUTION BY NITRIC OXIDE FROM FERTILIZER FACTORIES.

(Die Luftverunreinigung durch Stickoxide aus Duengemittelfabriken). Text in German. Wiss. Z. Humboldt Univ. Berlin Math. Naturw. Reihe, 19(5):523-525, 1970. 7 refs.

Air samples were taken in the vicinity of five chemical plants which produce saltpeter fertilizers. The most harmful pollutant in the emissions from these plants is nitric oxide which forms during the synthesis of nitric acid from atmospheric nitrogen. Ammonia, obtained by synthesis, is the second essential intermediat product in the process and the second major pollutant. Among the other pollutants found were acetylene, formaldehyde, and sulfur dioxide. In all cases the waste gases, containing 0.2 to 0.3% nitric oxide, were emitted through chimneys up to 100 m high. The gas temperature at the chimney exit was about 35 C. The daily 24-hr production of nitric acid varied from 360 to 600 tons per plant; the corresponding emission of nitric oxide was 3000 to 5400 cu m. The values of maximum N205 concentrations in the five factory areas, within a radius of two km, were 1.44, 0.18, 0.53, 0.65, and 5.0 mg/cu m. The average concentration was not directly proportionate to the production rate; rather, it is influenced by such factors as details of the production process, type of emission into the atmosphere, height of the chimney, and meteorological conditions.

CONTROL METHODS

12052 APTIC NO. 29273

(Inventor not given.)

PROCESS FOR THE SEPARATION OF SULFUR FROM GAS.

(Procede pour l elimination du soufre contenu dans le gaz). Text in French. (Parsons (Ralph M.)Co., Nev.) French Pat. Appl. 69-28844. 13p., Aug. 22, 1969. (8 claims).

The process described separates hydrogen sulfide and sulfur dioxide from gas emanating from the Claus process, and hydrogen sulfide from gas mixes obtained by partial oxidation of coal, oil, or other carbonaceous material for the synthesis of ammonia. The gas is at temperatures from 150 to 400 C brought in contact with ferric oxide fixated on a base material which contains from 10-40% iron trioxide. Ferric sulfide forms which is subsequently oxidized by hot air to sulfur, ferric oxide is recovered. The reactive mass forms a mobile bed which is continuously being recycled between the contact and the regeneration zone. In the contact zone at least part of the SO_2 reacts with the ferric sulfide, also yielding ferric oxide and elementary sulfur. The desulfurized gas escapes into the atmosphere. The vaporized sulfur contained in the gas issuing from the regeneration zone is condensed and deposited in a cooling chamber. The process can be so modified that it takes place in a single converter.

12053 APTIC NO. 29617

DESULFURIZATION OF LIQUEFIED PROPANE GAS. MOLECULAR SIEVE PROCESS.

(Desulfuration des G.P.L. Procede du tamis moleculaire). Text in French. Tech. Petrol., 26(284):17-20, Jan. 1971.

The caustic soda process for the desulfurization of liquefied gas poses a problem in the separation of the soda saturated with sulfur. A new process recovers the major portion of the sulfur by washing with amines following which the liquefied gas is dried and the last traces of sulfur and of mercaptan are removed by coadsorption on the molecular sieve product 13X by Union Carbide. The main advantage of the process is cleanliness. Two desulfurization units utilizing this process built by the GGohlin-Poulenc Co. for the Ile de France Refinery and the Strasbourg Refinery are described. In the first case a propane butane mixture containing 250 ppm by weight H_2S and 65 ppm by weight mercaptan is purified at 38 C to a residual content of 5 ppm H_2S and to a negative Doctor test for mercaptan. The installation consists of two columns, each of 2900 l capacity with a 6 m deep molecular sieve layer which alternate as absorber and as regenerator. Regeneration takes 6 hours, the cooling of the gas to a liquid phase is accomplished in three steps. The second plant differs from the first in its cooling plant.

12054 APTIC NO. 29624

CYLINDER HEAD DESIGN.

Automobile Engr., 61(1):16-21, Jan. 1971.

There is a controversy concerning the effect that exhaust emission requirements will have on cylinder head design in the future, and also on the use of air-flow rigs. The torque characteristics of an engine are determined largely by the stroke: bore ratio, and the ratio of the length of the connecting rod to the throw of the crankshaft influences the volumetric efficiency. For these reasons, the type of performance sought and the design of the cylinder head should be the starting points of engine design. Obviously, many other factors must be taken into account at an early stage: whether one design of head is to be used with engines of different displacements, the position of the camshaft, production facilities, and space inside the car are typical examples. Combustion chamber design, valves and ports, and valve timing are discussed in terms of exhaust emission regulations as well as engine construction and cheaper castings.

12055 APTIC NO. 29628

LAW-MAKERS SAY: CLEAN UP OR SHUT DOWN.

Can. Chem. Process., 55(4):47-50, April 1971.

The major push by the Canadian government to control air pollution will surely come once Parliament approves Bill C-224, the Clean Air Act. Under the Act, air polluters may be fined up to $200,000 per instance of violating one or more of the emission standards to be set by the Federal government. Also, the Act will empower federal authorities to fine any pollution source regardless of location; this is a major departure from current federal/provincial division of powers. Controlling the fumes from coking is mentioned, as well as regulations pertaining to the emissions from petroleum refineries, lead-in gasoline, automotive emissions, and aircraft exhaust smoke. Processes for the removal of sulfur dioxide are listed tabularly. The British Columbia government has offered a prize of $250,000 for the first individual or company to come up with a device to eliminate air pollution and odor of pulpmills.

12056 APTIC NO. 29686

DEVELOPMENT OF A NEW DUST COLLECTOR.

(Kokuen o mushokuen ni joka - Shigenken ga shin shujinho o kaihatsu). Text in Japanese. PPM (Japan), 2(5):52-53, May 1971.

A new dust collecting system for a coal boiler and a new smoke density meter were developed. The dust collector is used to eliminate the dusts and particles from chimneys. The coal for combustion is packed in a bed and used as a filter to eliminate dusts from smoke. The coal then falls by gravity to the belt conveyer to be thrown into the combustion room. The black color of the smoke from the combustion room of the coal boiler almost disappears after the smoke passes through the coal packed bed of the system. The coal is dried in the bed by the heated gas, and consequently burns well and does not generate dust. The size of the equipment is 1.3 meters high, 1.3 meters wide, and 7 cm thick. The construction is very easy. The cost of construction is estimated to be about $3000. The new smoke density meter surpasses the conventional Ringelmann smoke density chart in many respects and is expected to be used in the future. It has a telescope, and the light through the projecting out objective lens of 8.5 magnifications is compared in the eyepiece with the light through the light-in window at which special light-intensity filters of ten grades responding to the smoke densities are equipped for reference. This smoke features easy handling, small personal error, the possibility of remote measurement (1 km), the possibility of the estimation of total smoke exhaust, and high precision.

12057 APTIC NO. 29696

EFFECTS OF THE ADDITION OF BARIUM COMPOUND ON THE SMOKE CONCENTRATION OF DIESEL EXHAUST GAS. *(Dizeru haikien nodo ni oyobosu bariumu kagobutsu no eikyo). Text in Japanese. Kikaishi Nyusu (Govt. Mech. Lab. News), no.11:3-4, Nov. 1969.*

Diesel engines are usually operated under excess air conditions and the exhaust gas generally contains smaller amounts of harmful components compared to gasoline engines. But when accelerated or heavily loaded, the exhaust is black smoke. The addition of a small quantity of a barium compound to the fuel is recognized as an effective method to control the generation of the smoke. Experiments were conducted to obtain data on the effects of barium addition. The diesel engine used was Mercedes Benz OM 312 type. A transparent dispersion-type high-content barium compound was added to the fuel (barium content 20.3% wt). Two modes of operation were adopted in the experiment: cycle operations composed of ideal mode, acceleration mode, and lagging mode; and operations of different loads of four grades. The smoke concentration of each mode of operation was reduced by half when 0.5-1.0 volume % barium compound was added to the fuel. For different loads, the effect of barium addition was eminent in heavy loading and in 0.5% blending. It was concluded that 0.5% blending of barium compound was the most suitable. No effect was found on the performance of the engine. The carbon monoxide concentration in exhaust gas increased about 15%, but can be neglected due to the very small content of carbon monoxide in the exhaust gas of diesel engines compared with gasoline engines. Barium is thought to control the generation of free carbon by thermal cracking of the fuel and to promote the recombustion of carbon particles on which excess barium seems to have a negative effect.

12058 APTIC NO. 29724

DEVELOPMENT OF A METEOROLOGICALLY CONTROLLED AGRICULTURAL BURNING PROGRAM. *Bay Area Air Pollution Control District, San Francisco, Calif., Technical Services Div., Information Bulletin, 22p., Dec. 1, 1970. 7 refs.*

As an extension of the strong Bay Area Air Pollution Control District policy against open burning, the exception for deciduous fruit and nut tree prunings was placed under meteorologically controlled conditions in 1967. The presence of a temperature inversion based below 2500 feet was made the first criterion for the prohibition of burning. The local wind speed should exceed 10 mph; the direction should be such as to minimize any local nuisance. These predictions are made by a professional meteorologist before the regulated starting time for burning operations. Agriculturalists are not unduly restricted in their burning operations, and air quality is effectively protected. Analysis of objective prediction schemes indicates the possibility of standardizing the decision-making process. Until an independent test is made, the relative value of an objective scheme remains uncertain. It has been shown that a combined pollutant index, such as that used by the Bay Area Air Pollution Control District, is a valuable tool for statistical evaluation of forecast results.

12059 APTIC NO. 29761

Smaller Enterprises Promotion Corp. (Japan)

ON PUBLIC NUISANCE BY, AND ENVIRONMENTAL HYGIENE OF, PAINT MANUFACTURING INDUSTRY. *(Toryo seizogyo, kogai kankyo eisei ni tsuite). Text in Japanese. Rept. 417, p. 40-41, March 1971.*

A survey was taken on public nuisances in small enterprises. In the paint manufacturing industry fire hazards received 32.9% of the complaints and guidance by the supervising governmental offices bad odors received 28.2%. Other items in the list were effluents, smoke, noise, traffic noise and danger, and dust. Enterprises with a work force of 50-99 persons headed the list with 24 cases, followed by those with 30 persons or less with 22 cases. Of the 28 cases of fire hazard grievances, 20 cases have been corrected by improving the production facilities (17 cases) and by other corrective measures (three). Eight still remain incorrected. The reasons given for the pending corrective actions were that the preventive devices and facilities cost too much (one case), or that the factory space was too limited to spare extra space for installation of the preventive devices and facilities (seven cases). Also, 22 of 24 odor grievance cases were solved by equipment improvement (16), change of blended material (two), stoppage of the production of those products causing public nuisances (six), and other measures (two). Two cases still were uncorrected due to the lack of knowledge of what to do about the solution (one), and the cost of preventive equipment (one). The devices and equipment installed to improve the working environment were shown by purpose. Of the 85 enterprises surveyed, 17 had the heating/cooling facilities, 26 the deodorizing facilities, 30 the dust-removing, 69 the ventilating, and 18 the soundproofing.

12060 APTIC NO. 29767

PURIX WET COLLECTOR FOR WASTE GAS CLEANING. *(Purix-Nassentstauber fuer die Abgasreinigung). Text in German. Glueckauf (Essen), 107(11):N266, 1971.*

The Purix wet collector can be used for the simultaneous collection of dusts and toxic gases. The lower section of the Purix wet collector is a shaft-like form, where the scrubbing fluid enters continuously at several points. In the conical section of the collector, several mixes are formed following each other. A rotary movement is imparted by rigid guide vanes on the gas/liquid mixture, so the pollutant is separated by centrifugal force. The pressure loss is 130 mm water, and the collector requires no maintenance.

12061 APTIC NO. 29833

ACID MIST PRECIPITATOR MADE OF TEFLON FIBER. *(Saeurenebelabscheider aus Teflonfasen). Text in German. Stahl Eisen (Duesseldorf), 91(11):658-659, May 1971.*

With a daily capacity of 1000 tons, the Fisons company is one of England's largest sulfuric acid manufacturers. The acid mist from the stack gas was removed by a stainless steel and glass fiber collector which did not operate satisfactorily because too much acid was collected for the exit system. The acid temperature rose causing intense corrosion. Both problems were solved by the introduction of teflon fiber filters consisting of several layers. These filters had high efficiency because of the very smooth surface and the low diameter of the teflon fibers. The hydrophobic hydrogen fluoride surface fabors droplet formation and limits the liquid retention. Also, the teflon fiber is sturdy and able to withstand constant temperatures of 200 C.

12062 APTIC NO. 29855

NEW PROCESS OFFERS 99.9% SULPHUR RECOVERY. *Chem. Process., 17(1):11, Jan. 1971.*

A new process (the Beavon process) is designed to reduce the total sulfur in sulfur plant tail gas to below 250 ppm, well within the proposed U. S. limits. The process is a combination of hydrogenation, cooling, and Stretford processes. A sodium carbonate solution is reacted with hydrogen sulfide to form sodium hydrosulfide, which is oxidized to sulfur by sodium vanadate solution. Subsequently, the vanadium is oxidized back to the pentavalent state. The finely divided sulfur froth is then skimmed off, washed and partially dried by centrifuging, before melting at a low pressure and separation.

12063 APTIC NO. 29889

Air Pollution Control Association, Pittsburgh, Pa., TI-3 Petroleum Committee

CONTROL OF ATMOSPHERIC EMISSIONS FROM PETROLEUM STORAGE TANKS. *J. Air Pollution Control Assoc., 21(5):260-268, May 1971. 11 refs.*

The theory of evaporation loss from liquids, emission control equipment and its maintenance, and techniques for estimating the magnitude and reduction of emissions from petroleum storage tanks are presented. To reduce atmospheric emissions from a petroleum storage tank, heat input must be reduced and hydrocarbon vapor must be contained. Factors affecting the rate of evaporation loss are true vapor pressure, temperature changes in the tank, tank outage, tank diameter, schedule of tank fillings and emptyings, mechanical condition of the tank, and type of tank. The six sources or causes of emissions from petroleum in storage are breathing loss, standing storage loss, filling loss, emptying loss, wetting loss, and boiling loss. The four basic tank designs are fixed roof tanks, floating roof tanks including conventional and covered float tanks, variable vapor space tanks, and pressure tanks. Each is designed for special storage requirements and has specific requirements for accessories, maintenance, and efficient operation. The measurement of atmospheric emissions can be accomplished by decrease in stock volume, change in stock properties, and measurement of vapors vented. Special techniques can increase the effectiveness of each approach. Methods for calculating hydrocarbon vapor emissions from tanks are recommended.

12064 APTIC NO. 29947

CAN ADDITIVES DECREASE DIESEL SMOKE? Power, 114(8):60, Aug. 1970.

Recently an additive was developed to minimize smoky emissions from diesel engine exhaust. Previous efforts to improve combustion included the development of an anti-dribble injector and an injection timing device. Some of the fuel additives have a barium salt base; they lower the ignition point of certain fuel components, thus promoting quicker combustion. Others are of the detergent-dispersant type and tend to prevent carbon deposits on the upper cylinder engine parts. Additives cut down on air pollution, reduce maintenance needs, and cost only one or two cents per gallon. Diesel exhaust contains little carbon monoxide, is not poisonous, but is simply unsightly; therefore, it is hard to establish voluntary controls. Diesel trucks smoke because of inadequate maintenance, engine overload, poor fuel, and poor lubricants.

12065 APTIC NO. 30018

AIR FILTRATION SYSTEM FOR ELECTRIC FURNACE SWITCH GEAR AT LUKENS STEEL. *Blast Furn. Steel Plant, 59(4):222, April 1971.*

In order to achieve and maintain a clean atmosphere in two rooms of a steel plant that contain controls for three electric arc melt furnaces, high voltage mercury tube rectifiers, and de-gasser controls, revolving fiberglas filters were replaced by a system called Maxi-Filtration. This system involves bringing all the charging air for the room through a bag filter which utilizes a specially prepared two-part filter medium for high grade filtration. The system is operating with practically no maintenance or cleaning problem in the switch gear rooms.

12066 APTIC NO. 30057

Commonwealth Development Assoc. of Pennsylvania and Public Health Service, Durham, N. C., National Air Pollution Control Administration

JOINT DEMONSTRATION OF METHODS FOR EXTINGUISHMENT AND CONTROL OF BURNING COAL REFUSE PILES. (FINAL REPORT). *NAPCA Grant 68-A-4113D, 15p., 1969 (?).*

The relative effectiveness of two extinguishment methods were studied at the Huber Culm Bank Complex, near Ashley, Pennsylvania. The first method used a water monitor, dragline, bulldozers, and carryalls to remove, quench, transport, and compact the burning material. The second used a water monitor to cool the bank material, bulldozers to remove it, and carryalls to transport it to a disposal area where it was compacted in alternate layers with the quenched material from the first method. The Complex consists of six piles of culm (high ash refuse and other raw natural fuel contaminants) accumulated from a coal cleaning plant operation. The dust, smog, and toxic gases from this burning Complex have caused health problems, and the Complex has also caused economic losses in the amount of 30 million dollars each year. Various earlier projects are described. The two methods are discussed in detail along with costs. The first method was more effective, since it was more economical and could be used under more trying conditions. It was also more rapid and more feasible than the second method.

12067 APTIC NO. 30096

THE SCRUBBING OF TAIL GAS FROM SULFURIC ACID PLANTS. *In: Integrated Engineering Solutions to Overall Pollution Control: Air, Water, and Solid Waste Problems. New York, American Institute of Chemical Engineers, 1971, p. 2-1 to 2-7.*

Conventional sulfuric acid plants produce a final gas stream for discharge to the atmosphere which will usually have a sulfur dioxide concentration in the range of 1800-2000 ppm plus 1-3 ppm of sulfur trioxide, and an acid mist of 3-15 mg/std cu ft. A two-stage scrubber system using the Cominco process will reduce the sulfur dioxide content of acid plant tail gas to 300 ppm SO2 or less. The gas to be scrubbed is introduced into a vertical wood-stave tower divided into two packed sections, one above the other. In the lower packed section, the gas contacts recirculated ammonium sulfite solution where the SO2 content of the gas is appreciably lowered. Anhydrous ammonia is continuously added to the recycling liquid to control the pH constant. The gas then passes through an opening into the upper packed section where it is scrubbed with more alkaline ammonium sulfide solution. SO2 can be removed almost completely by scrubbing in a countercurrent packed bed with soda ash or caustic soda solution. Scrubbing can also be accomplished with high pH lime slurry. A venturi scrubber process for absorbing all sulfur oxides from a gas stream reducing the SO2 content of the effluent to about 200 ppm SO2 has been developed. The recirculating scrubbing liquid consists of a magnesium sulfate solution containing suspended solids of magnesium oxide and MgSO3. Scrubbing with alkaline zinc salts is another possibility. Operating variables and costs of the various processes are mentioned. Some dry reaction processes are also cited.

12068 APTIC NO. 30099

SUMMARY OF H2SO4 MANUFACTURE. *In: Integrated Engineering Solutions to Overall Pollution Control: Air, Water, and Solid Waste Problems. New York, American Institute of Chemical Engineers, 1971, p. 1-1 to 1-12. 4 refs.*

The manufacture of sulfuric acid is reviewed. Most plants built since the 1920 s have used the Contact Process for catalytically converting sulfur dioxide to sulfur trioxide and absorbing the SO3 produced in sulfuric acid. The steps which must be considered in designing a Contact plant are listed, as well as the chemical reactions that take place. Most modern plants use a vanadium catalyst. Manufacturing equipment comprises burners, apparatus to treat burner gas, heat exchangers and coolers, and converters. Many metallurgical refining operations produce a waste gas containing SO2 which is suitable for the manufacture of sulfuric acid without burning sulfur. Often a major problem is that these gases are loaded with dust and smelter fumes which would plug catalyst beds and produce impurities in the acid. Thus, equipment must be provided for cleaning of the gas prior to its use in the sulfuric acid plant. Often cyclones and electrostatic precipitators are used to clean the dry gas. Wet scrubbing and venturi scrubbers may also be employed. Costs are mentioned, as well as pollution control modifications. These may include mist control facilities or interpass absorption.

12069 APTIC NO. 30124

LEAD SMELTING PLANT CONTROLS AIR EMISSIONS. *Environ. Sci. Technol., 5(4):304-305, April 1971.*

In a secondary lead smelter where lead from old batteries is remelted and used to make new ones, odors from the smelting process are disposed of by incineration at 2400 F; lead oxide emissions and lead aerosols are trapped by baghouses; and sulfur oxide emissions are scrubbed with a venturi scrubber and mist eliminator. All water and acid from the operation in which the tops of old batteries are sheared off are collected, retained, and subsequently neutralized to eliminate acid before discharge to a water course. Old battery cases are crushed and used as landfill.

12070 APTIC NO. 30125

PREVENTING AIR POLLUTION FROM EXHAUST AEROSOLS. *J. Inst. Heating Ventilating Engrs. (London), vol. 38:A33, March 1971.*

A new self-cleaning electro-aerodynamic precipitator uses plates mounted on a rotating drum like the blades of a squirrel-cage fan. With each revolution of the drum, the blades are brought through a device to wash them with either an air or water stream. The precipitator also makes use of an electric field orientated in the direction of particle flow to prevent undesirable side effects. The electric corona necessary to charge aerosol particles is produced by applying a high voltage to a ring of alumel wires around the intake port. To prevent undesirable aerodynamic effects from the rotating plates, the collecting drum is mounted around the ring of wires and driven at a speed of only a few rotations/min. Mass-cleaning efficiencies as high as 99% have been obtained with this apparatus.

12071 APTIC NO. 29278

Alferova, L. A. and G. A. Titova

OXIDATION OF SODIUM SULFIDE AND MERCAPTIDE IN BLACK LIQUOR. *Bumazhn. Prom. (Moscow), 41(10):5-6, Oct. 1966. Translated from Russian by Brenda Jacobsen, Washington Univ., Seattle, Dept. of Civil Engineering, 11p., Oct. 31, 1970.*

To determine optimum conditions for black liquor oxidation, aqueous solutions of hydrogen sulfide, methyl mercaptan, and their salts were oxidized by aeration at various flow rates and temperatures and within a wide range of pH. For all solutions, the rate of oxidation was determined mainly by temperature and area of contact between the solution and oxidizing agent. Both hydroxone and hydroxyl ions had a catalytic action on the rate and mechanism of oxidation. To achieve a large contact area, aeration should be carried out in an atomizing-type apparatus. Temperature should be 80 to 100 C and pressure 4 to 5 kg/sq cm. Under these conditions, the rate of oxidation is determined by the value of the pH and of the ionic salt of the black liquor. The final pH must not be lower than 12.5, as at a lower pH other oxidation products (thiosulfates, sulfites, polythionates, etc.) predominate. The oxygen consumption under optimum conditions is approximately equal to theoretical calculations. (Author abstract modified)

12072 APTIC NO. 29471

Anson, D., W. H. N. Clarke, A. T. S. Cunningham, and P. Todd

CARBON MONOXIDE AS A COMBUSTION CONTROL PARAMETER. *J. Inst. Fuel (London), 44(363):191-195, April 1971. 13 refs.*

Factors contributing to the controllable heat losses in boiler furnaces are considered in relation to the operating conditions, particularly excess air. The optimum condition is shown to be closely associated with the point at which any further reduction in excess air leads to a rapid rise in the heat loss due to incomplete combustion. Parameters for characterizing this point are discussed, and the flue gas carbon monoxide level is proposed. Results of performance checks on oil-fired boilers are presented to illustrate that for a particular plant monitoring of this parameter consistently indicates the standard of combustion performance, and hence that it can be used for control purposes. (Author abstract)

12073 APTIC NO. 29675

Aono, Takeo

ENVIRONMENTAL POLLUTION CONTROL MEASURES IN WEST EUROPE AND PROBLEMS OF CARBIDE ELECTRIC FURNACE DUST IN JAPAN. *(Seio no kogai taisaku to nihon no kabaido denro funjin mondai). Text in Japanese. Fuero Aroi (Ferro Alloy J.), 19(2):75-79, Dec. 1970.*

Environmental control criteria imposed by the regulations in the West European countries are generally more lenient than in Japan. Also, more attention is paid to control of smoke and sulfur dioxide. Even a considerably high SO2 density will not cause the respiratory diseases which claimed a number of lives in London some years ago unless accompanied by the smoke dust or soot. In London, coal has been replaced by heavy oil in order to decrease the generation of soot. Low-sulfur oil is being used as a household fuel in some countries. The SO2 density in various European cities was measured: 0.10-0.18 ppm in London, 0.10 ppm in Bonn, 0.10 ppm in Paris, and 0.05-0.12 ppm in Rome. In the industrial cities, it was 0.19 ppm in Birmingham, 0.25 ppm in the Ruhr (Germany), and 0.21

ppm in the Duesseldorf industrial area; these values are all shockingly high when judged by the Japanese standards of 0.02 ppm for Tokyo, Yokohama, and Osaka, for instance. As to the question of the control of environmental pollution in harmony with sound industrial development, the answer in Britain, Germany, and France was that more weight was placed in the economy side in order to maintain international competitiveness. With respect to dust control in the domestic carbide industry, the number of the electric furnaces operating in April, 1969 was 69, of which 53 were open type furnaces. These 53 furnaces accounted for 56% of the national carbide output, amounting to 2,115,000 tons a year. Of th 53 furnaces, 19 are equipped with dust collectors, 16 with multicyclones, 3 with scrubbers, and 1 with an air tumbler. To achieve the 0.06 g/n cu m or lower criterian, the new regulation requires: that the furnace be a sealed type; the present multicyclone should be combined with a jet scrubber or the like; the multicyclone should be combined with a Cottrell; and a preduster (or multicyclone) and bag filter should be installed.

12074 APTIC NO. 29449

Araki, Tomiyasu, Isamu Tamura, Hiroki Nishizaki, Kiyoshi Saito, and Kazuo Endo

ON DISPOSAL OF PLASTIC WASTES (PVC) BY FLUID LAYER OF MEDIUM. *(Purasutiku haikibutsu (enbi) no baitai ryudoso ni yoru shori ni tsuite). Text in Japanese. Preprint, Japan Society of Chemical Engineering, Tokyo, 3p., 1971. 1 ref. (Presented at the Japan Society of Chemical Engineering Convention, Annual, 36th, Tokyo, Japan, April 2-5, 1971, Paper D311.)*

Polyvinyl chloride (PVC) was treated by a heated sand layer for dechlorination. The plastics thermal cracking process was examined by a thermobalance measurement. Also, the dechlorination was pre-tested by a batch type fluid layer of sand at various temperatures to examine the relationship between cracking temperature and weight loss and to inspect the adhesion of the medium (sand) to the test sample. Finally, the dechlorination was tested by a continuous type fluid layer of sand to verify the findings obtained from the batch type test and to determine the practical applicability of the method. At about 200 C, PVC remaine almost unchanged in appearance while the remaining volatile content was 90.1 wt% and the PVC did not adhere to the sand. At 250 C, it expanded and became porous while the residual volatile content was 83.7 wt% and the PVC adhered to the sand so much that it formed a mass. Then, at 300 C, it expanded and became porous; the residual volatile content was 69.2 wt%; the adhesion was almost non-existent No adhesion to the sand was noted at 350 C it was easy to separate the PVC from the sand. The combustion was likely to take place at 365 C or above. One hundred percent dechlorination of PVC was achieved at around 350 C. Thus, the practical dechlorination process of PVC can be carried out at about 350 C. Whether it is possible to apply biological treatment to the PVC treated as above and how chlorine and solid matters produced by the dechlorination process can be effectively utilized is still an object of future study.

12075 APTIC NO. 29941

Aramaki, Mikio

STUDIES ON AIR POLLUTION CONTROL BY ADDITIVE INJECTION. PART II - PREVENTION OF CLOGGING AT HIGH TEMPERATURE HEATING SURFACE OF BOILER BY ADDING MG(OH)2 POWDER. *(Boira ronai tenkaho ni yoru engai boshi no kenkyu (sono 2) - Mizumagu tenka ni yoru boira koon dennetsubu no heisoku boshiho). Text in Japanese. Mitsubishi Juko Giho (Mitsubishi Heavy Ind. Tech. Rev.), 8(2):215-220, March 1971. 3 refs.*

A method designed to desulfurize exhaust gases by means of injecting limestone or some other additive into a boiler furnace gives rise to a few new problems that need to be solved before the practical application of the method. The gravest problem of the method is clogging caused by deposits that accumulate on the high temperature heating surface of the boiler. Laboratory tests were conducted to determine effectiveness of the magnesium hydroxide powder injection method, in which magnesium hydroxide powder is intermittently injected onto the limestone injected into the furnace. The tests were conducted under the following conditions: heavy oil fuel combustion, 18 kg/hr; limestone injection, 5.4 kg/hr (30% quantity of heavy oil fuel); anti-clogging agent injection, 5.4 kg/hr; temperature of combustion gas at the test section, 850 C; flow velocity of combustion gas at the test section, 15 m/sec; and temperature of inner wall of the test probe, 600 C. The anti-clogging agents used were magnesium hydroxide and fly ash. The limestone and anti-clogging agent were injected alternately and intermittently; the agent was injected for 10 min in a 60 min period and the limestone for 50 min of the same 60 min period. The relationship between the deposits and injection of the additive such as magnesium hydroxide or flyash or a mixture at various mixing ratios was fully studied. The method was effective in preventing clogging. The hard deposits adhering to the high temperature heating section softened with the addition of magnesium hydroxide. The separability of the deposits was remarkably improved. The lowest nozzle blow velocity of a soot blower required for the separation was reduced from 105 m/sec to 57 m/sec. The critical separation resistance was reduced from 0.33 kg/sq cm to 0.263 kg/sq cm. The quantity of the deposits decreased with the additive injection.

12076 APTIC NO. 29622

Argenbright, Lee P.

SMELTER POLLUTION CONTROL--FACTS AND PROBLEMS. *Mining Congr. J., 57(5):24-28, May 1971.*

Copper smelters produce the largest total volume of the nonferrous metals and have some of the greatest problems in recovery of sulfur oxides. The major sulfur recovery from smelters is in the form of sulfuric acid at the present time, but the problem lies in the lack of consumers for the acid within practical access of the smelting facilities. It has been suggested that sulfur oxide gases be reacted with lime to produce a disposable material which is primarily gypsum, an insoluble and relatively inert product. Unfortunately, the best lime for such use will not be pure and some soluble substances will also be produced. With the advent of rainfall, a stream pollution problem of substantial proportions may exist. There are several proven processes for reducing sulfur oxides to sulfur from high concentration gases. To take advantage of these processes there has been and is continuing, a considerable effort to concentrate weak gases to suitable strength. Implementation of any new control process requires the very minimum time of five years. System capability and reliability must be considered, as well as economic factors. In the future, smelters will tend to use continuous rather than batch processes.

12077 APTIC NO. 29985

Arima, Yusuke

COMBUSTION OF WASTES CENTERING AROUND REMOVAL OF NOXIOUS GAS. *(Yudokugasu jokyo o* *chushin to shita haibutsu nenshoho). Text in Japanese. PPM (Japan), 2(6):22-29, June 1971.*

The Omega solution and the heat-turning furnace equipment are two effective devices designed to dispose of various air pollutants including dusts, mists, and gases produced as a result of the combustion of various fuels. A fuel material consists of combustibles and volatiles (carbon dioxide plus water, hydrocarbons, carbon monoxide + hydrogen). When heated, the CH compound is pyrolized to produce carbon (soots), methane and acetylene which require a considerable length of time to change to CO and H2. If the Omega solution is used, fatty acid salts of the solution liberate the salts under high furnace temperatures, thus becoming unstable fatty acid molecules. These salts, together with aldehydes, act as catalysts to promote reaction of CH. At this point, the liberated metals become activated and act as catalysts promoting the combustion of CO and H2 at high temperature. The Omega solution consists of complex salts primarily composed of heavy metal elements and nonmetal elements, containing sodium, magnesium, zinc, actinium, barium, and CO and their complex salts. The decomposition of the Omega solution takes place at, or about, 320 C and becomes drastically active as the temperature reaches about 850 C. Jetted into the furnace, it gives a vortex flow, resulting in better contact with the combustible gases, makes the flow of the flame completely dispersed. Heat causes a change, producing combustibles and combustion-accelerating contents; the metals generated by the pyrolysis act as catalysts and accelerate the decomposition of water and combustion of carbon oxides. The heat-generating contents of the solution induce a continuous micro-explosion phenomenon which vibrates the combustion gas. Thus, it makes greater contact with the air and continuously produces a vortex flow in the combustion chamber which promotes perfect combustion. As a result, less air still gives effective combustion. The entire furnace equipment consists of a dust collection mechanism, a chemical treatment process, a thermal clarification process, an adsorption chamber, a cooling tower, a separation device, a blower, and an exhaust stack. The smoke and gas flows turning through the tubular furnace duct where they absor the omega solution jetted in. They are then jetted into the combustion chamber where they are burned for perfect combustion. Unburned solids and incombustible inorganics are effectively separated by centrifugal force and retained in the bottom room of the furnace.

12078 APTIC NO. 29927

Atsugawa, Masumi, Korehiko Nishimoto, and Toru Seto

DESULFURIZATION OF EXHAUST GAS. *(Haigasu no datsuryuhoho). Text i Japanese. (Industrial Technology Agency (Japan), Director General) Japan. Pat. Sho 46-2641. 3p., Jan. 22, 1971. (Appl. June 6, 1967, claims not given).*

In the activated manganese dioxide desulfurization method, activated MnO2 powder, used as an absorbent, is directly added to exhaust gas for the removal of sulfur dioxide. This invention features a new dust collection system designed to collect soot and ash (oil dust) contained in the exhaust gas before they contact the absorbent, so that the oil dust will not accumulate in the absorbent to an excessive degree. Thus, the desulfurization efficiency of the activated MnO2 method will be greatly improved. The oil dust absorbed by the absorbent builds up as the absorbent is repeatedly circulated, which deteriorates desulfurization efficiency. Use of an electric dust collector appears to be a solution to the problem. This involves a difficult technical problem, since the collector is only effective on substances whose specific resistance is 10,000,000 to 10 to the sixth power ohms/cm and the oil dust has a specific resistance of 10,000 to 100,000 ohms/cm. Thus, the oil dust removal requires use of a multi-stage electric dust collector which is very expensive and economically disadvantageous. To solve this problem, the new method uses activated moist MnO2 powder as an additive to improve the efficiency of oil dust collection by an electric dust collector. In the desulfurization, MnO2 is obtained by oxidizing manganese sulfate with oxygen or an oxygen-containing gas under the presence of free ammonia. The moist MnO2 powder is added to exhaust gas for the removal of the oil dust by an electric dust collector. The the gas is contacted with MnO2 for desulfurization.

12079 APTIC NO. 30108

Auclair, M.

LOW POWER HOUSEHOLD OIL BURNING INSTALLATIONS. HOW THEY FUNCTION, PROPOSAL FOR A METHOD OF REGULATING THEM. *(Installations de petite puissance au fuel domestique. Fonctionnement. Proposition d une methode de reglage). Text in French. Pollut. Atmos. (Paris), 13(49):23-29, Jan.-March 1971.*

Small oil burning heating installations were studied to show that it was possible to regulate them so that no smoke would be emitted. The combustion criterium was selected of zero on the Bacharach index of smoke opacity because it is simple to use and sensitive if only required to detect the presence of carbon diioxide in smoke. The incidence of various parameters influencing the quality of combustion was studied to develop an extremely simple method of regulation. Temperature, supply of combustibles, pressure, and excess air were varied.

12080 APTIC NO. 29536

Baba

MITSUBISHI-RESEARCH DISC SCRUBBER. *(Mitsubishi-risachi disuku sukuraba). Text in Japanese. Mitsubishi Juko Giho (Mitsubishi Heavy Ind. Tech. Rev.), 8(2):370-371, March 1971.*

A new disc scrubber was developed which is employed as a dust collector for lime kilns, electric furnaces, and cupolas. When a large pressure loss is not permissible for a dust collector or the quantity of gas to be handled is comparatively small or widely fluctuating, the disc scrubber can be used more advantageously than the wedge scrubber. In response to the varying quantity of gas, the disc functions to move the cone section of the duct up or down to adjust the sectional area of the throat, thereby keeping the performance efficiency constant. Wash water is fed through the disc support onto the upper surface of the disc. The gas containin the dust hits the water on the upper surface of the disc while the wash water, overflowing at the throat section around the disc, contacts with the high-velocity gas to become completely atomized, collides with the dust and forms waterdrops. It is then collected at the mist eliminator. The position of the disc is adjusted by detecting the pressure difference between the upper flow and the lower flow at the cone section of the duct and then moving the disc support up or down in such a way that the pressure difference may be kept constant at the pre-determined value. The adjustment of the constant efficiency can be made up to 20 : 1. When the temperature of the gas at the entrance is very high, it should be cooled to 300 C.

12081 APTIC NO. 29537

Baba

MITSUBISHI-RESEARCH WEDGE SCRUBBER. *(Mitsubishi-risachi uejji sukaraba). Text in Japanese. Mitsubishi*

Juko Giho (Mitsubishi Heavy Ind. Tech. Rev.), 8(2):369-370, March 1971.

A new wedge scrubber was developed, the features of which include simplified construction, easy maintenance and lower maintenance costs and less space for installation. The varying quantity of gas is controlled by means of a rotation angle of the wedge disc in order to provide a constant efficiency of dust collection; it uses no spray nozzle, so that there is no problem of the nozzle being clogged up. REcirculation of the water is permitted which results in less water consumption; no high-pressure water is necessary for atomization. The important parts are made of abrasion-resistant material for greater abrasion resistance and, combined with a mist eliminator, it gives high efficiency. The orifice and shaft sleeve are made of abrasion-resistant material while the wedge disc is of steel and coated with a deposited metal. Wash water is taken in through 4-8 water inlets provided in the upper flow section of the orifice, overflows from the orifice section, and contacts with the high-velocity gas for complete atomization. The wedge disc is fixe on the shaft and changes its angle of rotation within the range of 0-120 degrees according to the varying quantity of the gas so that the dust collection efficiency may be constant. Rotation angle of the wedge disc is controlled so as to hold the pressure difference between the upper flow and the lower flow of the orifice at a pre-determined value. The maximum capacity per scrubber is up to about 3,000,000 N cu m/hr when the duct is 3200 mm in diameter. When the temperature of the gas at the entrance is very high, it should be cooled down to about 250 C.

12082 APTIC NO. 29626

Baker, P. J. and B. E. A. Jacobs

PULSED EMISSION CHIMNEY. *Civil Eng. Public Works Rev., 66(775): 199-200, Feb. 1971.*

The British Hydromechanics Research Association recently demonstrated a 20 ft high model of a fluidic chimney, which ejects discrete vortex smoke rings, thus causing the smoke to attain higher altitudes and thereby minimizing air pollution. In a vortex ring, the smoke is transported through the atmosphere by a rolling motion rather than sliding. This rolling motion results in smaller velocity gradients. Thus, mixing between a ring and the atmosphere is less than between a plume and the atmosphere. The major application of this method is likely to be under stable conditions with a temperature inversion in, for example, a valley where the smoke from a conventional plume becomes trapped, resulting in a high level of concentration. Model tests have shown that vortex rings will double the height of penetration of an inversion over the equivalent steady state plume case.

12083 APTIC NO. 30034

Baum, H. E.

BALL BLANKETS FOR EFFLUENT TREATMENT. *Effluent Water Treat. J. (London), 11(4):211-212, April 1971.*

A new inexpensive and highly effective means of suppressing fumes from open liquid surfaces has been brought into use in many industries; this is the ball blanket technique in which a closely packed layer of chemically inert hollow plastic balls is floated on the surface of the effluent. By this means, a 91% covering is obtained, irrespective of the diameter of the ball. The blanket conforms readily to the contours of any shape of tank and remains unaffected by rise and fall in liquid level. The effectiveness of the ball blanket technique as a means of suppressing fume emission was brought into prominence after the ability of the system to reduce heat and evaporation losses from open-top hot processing tanks had been shown by industrial applications. A good example of the effectiveness of the floating ball blanket in eliminating fume emission without increasing the explosion risk is to be found in a fully automatic nitroglycerine plant.

12084 APTIC NO. 30010

Becker, K.

GASOLINE WITHOUT LEAD. TECHNICAL POSSIBILITIES FOR A NON-LEADED FUEL. *(Benzin ohne Blei. Technische Moeglichkeiten, Kraftstoffe nicht zu verbleien). Text in German. VDI (Ver. Deut. Ingr. Nachr.) (Berlin), 25(18):1-15, 1971.*

Three of the various compounds which have been considered as replacements for tetraethyl lead as an anti-knock agent in gasolines are noted: iron pentacarbonyl, manganese carbonyl, and monomethylaniline. The first has been eliminated as an anti-knock agent because its combustion product, ferric oxide, causes extremely high engine wear. Manganese carbonyl has never been used because of its high price. The efficiency of monomethylaniline is about 55 times lower than that of tetraethyl lead. It also forms a large amount of residual matter in the intake system of the engine. One solution although an expensive one, is the production of a lead-free or low-lead gasoline with octane numbers between those of today s normal and super gasolines. This will be feasible within six years, according to the petroleum industry. Secondly, engines with larger piston displacement and less compression must be constructed. The tax based on piston displacement must be abolished to permit construction of larger engines.

12085 APTIC NO. 29680

Bender, Rene J.

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.

While adequate monitoring equipment is available, research is underway to improve the instruments. Fuel oil burning produces carbon monoxide; by monitoring the oxygen with a Polarographic method, combustion can be held at an ideal fuel-oil firing condition. The atomic absorption spectrophotometer and thin-layer chromatography followed by a fluorescence analysis are other measurement methods. Some improvement in air quality has occurred. The Federal Clean Air Act of 1970 has established air quality standards for sulfur dioxide, particulates, nitrogen oxides, CO, hydrocarbons, and oxidants. A compact monitoring system for SO2, NOx, hydrogen sulfide, fluorides, aldehydes, and oxidants uses absorption columns and colorimetry. An electrochemical transducer can monitor nitrogen oxides and SO2. Particulate mass can be measured with a beta-ray beam passing through a filter. Firing conditions can effect stack gas composition. Also, gas-cleaning equipment can include water sprays, mechanical dust collectors, separators, dry scrubbers, fabric filters, electrostatic precipitators, cyclone dust collectors, bag filters, venturi scrubbers, impingement trays, wet scrubbers, or afterburners. Sulfur dioxide can be eliminated by the use of low sulfur fuels or the treatment of flue gases. Many pilot plants are attempting to recover the sulfur product. The most promising and economical SO2 removal method depends on the scrubbing of gases with soda ash followed by the conversion of the product to calcium sulfite under the action of lime. The Tennessee Valley Authority is trying out several SO2 removal processes. Nitrogen oxides are found in automotive exhaust and flue gas; they can be reduced by control of the combustion process.

Fuel additives may also help stop atmospheric pollution. Tall chimneys are not the final answer to air pollution, but are an excellent stopgap. Pollution controls in incinerators, and the metallurgical industry (ferrous, bronze, and brass) are also discussed. The amount of emissions for multiple and single chamber incinerators, blast furnaces, sintering machines open hearths, electric arc furnaces, basic oxygen furnaces, crucibles, reverberatory furnaces, and rotary furnaces are given before and after the use of control equipment.

12086 APTIC NO. 29752

Benson, Homer E.

SEPARATION OF CO2 AND H2S FROM GAS MIXTURES. *(Benson, Field and Epes, Pittsburgh, Pa.) U. S. Pat. 3,563,695. 31p., Feb. 16, 1971. 5 refs. (Appl. March 4, 1969, 30 claims).*

A new process which employs aqueous alkaline scrubbing solutions fo the removal of carbon dioxide and hydrogen sulfide from industrial gas mixtures is described. Two distinct absorption zones are utilized, supplied with separate streams of solution and operating at different temperatures. The gas flows through the separate absorption zones in series, leaving the higher temperature zone at a temperature higher than the atmospheric boiling temperature of th regenerated solution. Two separate regeneration zones are used, wherein the separate streams of solution from the absorption zones are steam-stripped to desorb eht acid gas. One of the regeneration zones is maintained as a higher temperature zone operating at superatmospheric pressure and supplied with hot solution from the higher temperature absorption zone. The other of the regeneration zones is maintained as a lower pressure, lower temperature zone supplied with solution from the lower temperature absorption zone. Stripping steam for the lower temperature regeneration zone is generated by reducing the pressure on the hot regenerated solution from the higher temperature regeneration zone. This process permits the effective utilization of the heat content of hot feed gases and the heat of absorption of the acid gases, heat sources which were largely wasted in previous processes. (Author abstract modified)

12087 APTIC NO. 29980

Berezin, V. A., K. G. Ilin, V. V. Denisov, S. Sh. Ginzburg, V. I. Skripchenko

USE OF VANADIUM CATALYSTS IN PURIFYING INDUSTRIAL WASTE GASES FROM SULFUR DIOXIDE. *(Primeneniye vanadievykh katalyzatorov dlya ochistki otkhodyashchikh gazov promyshlennykh predpriyatiy ot dvuokisi sery). Text in Russian. Khim. Prom. (Moscow), no. 2:122-125, 1971. 8 refs.*

Catalytic oxidation of sulfur dioxide was studied at SO2 concentrations in a gas stream equal to 0.3 1.5%. The experiments were carried out by a dynamical method with static contact (vanadium catalyst BAV). The concentration of oxygen in a gas varied between 1 20%. Catalyst temperature was 400 - 550 deg and contact time was 0.06 0.9 sec. The degree of conversion of SO2 to SO3 rapidly increased with increase in time of contact of the gas with the catalyst (to 90% when time of contact was 0.3 sec) and it decreased with the decrease in oxygen concentration in the gas (very rapidly for oxygen concentration below 5%). A kinetic equation for SO2 oxidation previously derived was modified for use in a studied case of low SO2 concentrations. The plot log K (rate constant) vs. reciprocal of temperature consisted of two straight lines of different slopes. A change in the slope at lower temperatures corresponds to a decrease in vanadium catalyst activity caused by transition of active form of catalyst to low-activity vanadyl sulfate. The activation energy of the process for various contact times was 14 22 kcal/mole, which indicates that at low SO2 concentrations, the regime of the process of SO2 oxidation lies somewhere between the kinetic and diffusion region. Thus, vanadium catalysts can be successfully applied in the purification of high-temperature effluent gases from SO2.

12088 APTIC NO. 30036

Bhattacharyya, K. K., R. Kok, and W. Bulani

LAB TESTS SHOW ELECTRIC FIELD MIGHT HELP REDUCE ENGINE KNOCK. *Automotive Eng., 78(11):24-27, Nov. 1970.*

A Ricardo E 6/T variable compression ratio, 4-stroke, overhead valve engine was used to study the effect an electric field can have on combustion under nonknocking and knocking conditions. The engine was loaded by means of a swinging field dynamometer, whose field voltage or armature-circuit resistance could be controlled. A brass plate was inserted between the cylinder head and the block; it contained apertures for the high voltage probes to the combustion chamber, for quartz windows for flame front detection, and for pressure pickup. Voltage could be adjusted between O and 25 kV, with a maximum current of 50 mA. Preliminary test results have indicated that, while the application of a positive voltage induces knock, a negative voltage suppresses it. This was true for both continuous and intermittent use of an electric field. Possible explanations for this effect of an electric field are discussed.

12089 APTIC NO. 29618

Bibbo, D. N.

PLAIN TALK FOR EQUIPMENT SELLERS--AND BUYERS. *Ind. Water. Eng., 7(10):28-31, Oct. 1970.*

In the development of a piece of pollution abatement equipment, some design parameters which should be considered include ruggedness, simplicity, reliability, ease of maintenance, and compatibility with competitors equipment. Other advice from the consulting engineer to both the vendors and users of equipment for pollution abatement pertains to finding the appropriate product for the job, composing the proposal, meeting deadlines, and fulfilling the guarantees.

12090 APTIC NO. 29513

Brandel, A. and P. Fontaine

EXPERIMENTS CONCERNING STOICHIOMETRIC COMBUSTION IN OIL-FIRED FURNACES OF FRENCH POWER PLANTS. *(Versuche ueber die stoechiometrische Verbrennung in oelgefeuerten Kesseln franzoesischer Grosskraftwerke). Text in German. Mitt. Ver. Grosskesselbesitzer, 51(2):147-151, April 1971. (Presented at the VGB-Fachtagung Oelfeuerungen 1970, Munich, West Germany, Oct. 9, 1970 and Bremen, West Germany, Oct. 23, 1970.)*

Combustion with small air surplus was studied in a large French power plant comprising five boiler furnaces, each equipped with 16 burners. Measurements were taken at full load, medium load, and smallest load. Flue gases were analyzed for their oxygen, carbon monoxide, hydrogen, and sulfur oxides content. Also determined were the dew point of the flue gases, corrosion speed, and the quantity of unburned matter in the flue gas. The SO3 content increased with increased O2 content and with increased sulfur content of the fuel. The dew point was at 120-125 C when the SO3 content of flue gas was above 7 ppm. When the boilers were operated with an O2 content of less than 0.2%, the danger of low-temperature corrosion was so small that a safe operation of the air preheater was guaranteed. At small air surpluses, i.e., also at very small SO3 concentrations, the measured corrosion speed was relatively slow. The solid unburned matter measured in the waste gas was relatively low, becoming noteworthy only when the combustion process reached near stoichiometric conditions. It is concluded that this plant is particularly suitable for combustion with small air surplus.

12091 APTIC NO. 29514

Brinke, R.

VENTILATION AND EXPLOSION EXPERIMENTS IN A WATER-TUBE BOILER OF A POWER PLANT. *(Durchlueftungs-und Verpuffungsversuche an einem Kraftwerks-Wasserrohrkessel). Text in German. Mitt. Ver. Grosskesselbesitzer, 51(2):104-111, April 1971.*

For ventilation and explosion experiments, an additional gas burner was installed on a water-tube boiler fired with pulverized coal. A separate blower was assigned to the burner. The boiler was designed for 84 atm gauge, 500 C, and 64/80 tons/hr. During the ventilation experiments, the plant was operated in a pressureless state (all ventilation pipes open) with the oil burners. Changes in the carbon dioxide fraction in the waste gas were measured with an infrared analyzer. The experiments were conducted at air volumes of 60,000 to 17,000 cu m/hr. Application of high air volumes showed some success after a short period of time. The change in the CO2 fraction in the waste gas, which depends on duration of ventilation and on air volume, is illustrated. Ventilating with an air volume of 60,000 cu m/hr (90% of the capacity), the CO2 concentration at the boiler end was reduced to 50% in 102 sec (measured value) or 98 sec (calculated value), and to 0% in 240 sec (measured value) or 221 sec (calculated value). The frequency of air exchange for total removal of CO2 at the boiler end was 7.3. The air speeds required were less than 1 m/sec in the combustion chamber, 3 m/sec in the flue, and 4.4 m/sec at the bottom of the stack. With an air volume of 17,000 cu m/hr (25% of the capacity), the CO2 concentration was reduced from 100% to 50% at the boiler end in 158 sec (measurement) or 163 sec (calculation) and to 0% in 360 sec and 367 sec respectively. The frequency of air exchange was 3.1. Air speeds of 0.23 m/sec in the combustion chamber, 0.8 m/sec in the flue, and 1.2 m/sec at the bottom of the stack were necessary.

12092 APTIC NO. 29856

Brogan, John J.

ALMOST POLLUTION-FREE POWERPLANTS ARE SCHEDULED FOR EARLY 1975. *Automotive Eng., 78(12):40-42, Dec. 1970.*

Initiated by the National Air Pollution Control Administration, the Advanced Automotive Power Systems Program will provide technical demonstration of a minimum of two different unconventional powerplants in automobile chassis by February 1975. Of the various candidates, the gas turbine is currently closest to being a viable replacement for the conventional internal combustion engine, with the heat engine/battery hybrid ranked second in priority. The rankine cycle engine is ranked third, but past rankine system development has been handicapped by relatively inefficient components and their attendant large size.

12093 APTIC NO. 29607

Browder, T. J.

MODERN SULFURIC ACID TECHNOLOGY. *Chem. Eng. Progr., 67(5):45-50, May 1971.*

One of the most effective methods for reducing sulfur dioxide pollution from sulfuric acid plants is by use of a new patented double contact/double absorption sulfuric acid system, high efficiency demisters, and, if necessary, final wash towers using an SO2 absorbent. Air is blown through a drying tower, and then into a sulfur combustion furnace to generate the required dry SO2 gas. Hot gas leaving the furnace is first cooled in a waste heat boiler to generate high pressure steam. After being cooled further in the first heat exchanger, it is passed into the converter. Gas entering the converter after passing through the first bed is returned to the converter after being previously cooled in the second heat exchanger. The gas leaving the second catalyst bed is cooled in a superheater and returned to the converter for reaction in the third catalyst bed. The gas leaves the converter and flows to an economizer for cooling, and onto the first absorption tower to remove sulfur trioxide gas. The remaining unconverted SO2 gas and the oxygen leaving the tower are then passed through the first and second heat exchangers, then into the final catalyst bed. Gas leaving the final catalyst bed is again cooled in another economizer before absorbing the remaining SO3 in the final towers. Equipment for this process is described, as well as its advantages.

12094 APTIC NO. 29861

Busch, Hans-Peter and Friedrich Erwin Seese

THE NEW DUPLEX IRON MELTING PLANT AT THE M. BUSCH KG IN WEHRSTAPEL. *(Neue Duplex-Eisenschmelzanlage bei der M. Busch KG in Wehrstapel). Text in German. Giesserei (Duesseldorf), 58(7):171-173, 1971.*

A hot blast cupola furnace plant with two furnaces and an hourly melting capacity of 12.5 tons is described. The plant is equipped with a dust collection system comprising saturation apparatus, a venturi scrubber, a collector, a waste gas blower, and an exhaust pipeline for the cleaned gas. The annular chamber of the cupola furnace is equipped with a pressure-measuring probe. The measured pressure is relayed to a regulator from which impulses are sent to the motor that adjusts the dosing device for the waste gas. This method guarantees that all waste gas is passed to the dust collection plant. The path of the gas to the second furnace is blocked by water. The waste gas is drawn off just below the furnace throat and is cooled from 250-350 C to 80 C by saturation with water vapor. The gas next enters the venturi scrubber where the dust particles are thoroughly mixed with water and retained in the subsequent collector. The cleaned gas is then discharged through the stack.

12095 APTIC NO. 30123

Byers, R. Lee

GRAVITATIONAL AND DRY CENTRIFUGAL COLLECTORS AND AIR POLLUTION CONTROL. *IN: Integrated Engineering Solutions to Overall Pollution Control: Air, Water, and Solid Waste Problems. New York,0 American Institute of Chemical Engineers, 1971, p. 8-1 to 8-25. 8 refs.*

Nearly every particulate collection device employs a collection mechanism which in some way depends upon the size of the particle being collected. If a particle is large enough, two rather simple mechanisms may be used to remove it from the entraining gas: the accelerating force of gravity and centrifugal force resulting from circular motion. Both of these forces, expressed as a ratio to fluid resistance, increase with the square of the particle diameter. The settling chamber is the only gravity type collector; the cyclone is an inertial collector as are also impingement separators and dynamic separators. Operating parameters of gravity settling chambers and cyclone operation are discussed, as well as efficiency, pressure drop, gas properties, and dust loading. In order to achieve a practical gas volume when small diameter cyclones are used, a common practice is to arrange them in parallel. Costs are cited.

12096 APTIC NO. 29926

Cecil, R. R., B. J. Young, K. Ito, and M. Sudo

ESSO/UNION FUEL OIL HYDRODESULFURIZATION PROCESSES. PART II: COMMERCIAL EXPERIENCE WITH GO-FINING. *Preprint, Japan Petroleum Inst., Tokyo, p. 13-37, 1970. (Presented at the Symposium on Fuel Oil Desulfurization, Tokyo, Japan, March 10-11, 1970.)*

There are two GO-fining hydrodesulfurization units being used in commercial plants in Japan, one a 35 MB/D unit, the other a 25 MB/D unit. Both are operating smoothly and performing fully up to all design expectations. Four additional units are planned or under construction. The 35 MB/D unit started up with no process problems in 1969. The test run made at the full design feed rate demonstrated that the unit could comfortably equal or exceed commercially every design criterion established by the pilot plant tests. The unit is designed to remove 90% of the sulfur from a 600/1050 F Khafji vacuum gas oil. After five months of operation catalyst activity decline was negligible. The 25 MB/D was started up in 1968. Operation of the unit is smooth and design performance was demonstrated with no corrosion, fouling, or catalyst bed plugging. Catalytic deactivation was negligible for the first ten months of operation. Product sulfur levels were maintained in the 0.2-0.4 wt% range with essentially no increase in temperature necessary except to compensate for feed variations.

12097 APTIC NO. 29523

Chase, Herbert

HEAT EXTRACTION AIDS DEPOLLUTION OF GASES AND WATER IN CHEVROLET FOUNDRY. *Ind. Heating, 38(4):624-628, 630, April 1971.*

Among the large plants actively and effectively carrying out depollution of air and water is the iron foundry of Chevrolet at Tonawanda, N. Y. Gases heated by coke burned in cupolas are cooled by water circulated in the new processing system. Poluting solids are removed effectively in a venturi and water in the process is returned to the Niagara River cleaner than when pumped initially from the same stream. Considerable heat absorbed by the water is turned into steam but is condensed before being returned to the atmosphere via stacks. Effluent from the stacks is so well cleaned as to be almost invisible. Steam condensation and other cooling result in reduced power needed to drive a large suction fan near the end of the system. This factor lowers the power cost for operation of the purification system and reduces the white plume caused by condensation of water vapor.

12098 APTIC NO. 30102

Chilton, T. H.

REDUCING SO2 EMISSION FROM STATIONARY SOURCES. *Chem. Eng. Progr., 67(5):69-72, May 1971. 4 refs.*

By 1980 two-thirds of the total sulfur dioxide emissions are expected to originate from power plant operations as a result of the anticipated increase in electric power demand. If uncontrolled, the expected increase might reach 62 million ton/yr by 1990. Proposals that would remove sulfur from coal before it is burned, or would take care of it in a radically redesigned type of boiler, offer challenging opportunities for long-range application, but little hope of adaptation to existing units or even any in the present planning stage. The system that appears to offer the best hope for near-term relief for existing plants is the dry-injection, wet scrubbing method. Trials with limestone and dolomite indicate that the method would require the least modification of existing boiler installations and might afford some measure of relief under unfavorable atmospheric dispersion conditions. Since limestone injection is a throw-away process, one modification has been proposed, in which a magnesia additive would be used and the solid waste products processed for recovery of sulfur. Adsorption on solids has also been proposed, such as the alkalized alumina process and manganese dioxide method though the low gas velocities presumably required for passage through beds of solids, without excessive pressure drop, present formidable equipment problems. The Monsanto Catalytic oxidation process also has drawbacks.

12099 APTIC NO. 29990

Costa, David

THE PROBLEM OF INDUSTRIAL DUST: WAYS TO REGULATE ITS COLLECTION. *Filtration Eng., 2(2):6-8, 11-12, March-April 1971.*

The problem of dust collection is essentially one of economics. Solutions could be found by balancing the costs of plant operations without dust collection with the cost of efficient dust collecting equipment. The methods most frequently used to analyze minute dusts are elutriation, sedimentation, and centrifugal classification. To predict the performance of an inertial-type dust-collecting apparatus, it is necessary to consider the specific gravity of the particle, its shape, its diiameter, and the viscosity of the fluid carrying the particle. Almost all the methods presently used to determine the particle size use computations based on Stokes Law to obtain the equivalent particle diameter from its terminal velocity. Equipment for the collection of flyash from coal fired burners or stoker-fired burners includes centrifugal dust collectors, low-velocity cyclones, high velocity cyclones, and electrostatic precipitators. Electrostatic precipitators, when properly designed for a particular application, are capable of very high collection efficiencies with very fine dusts. Excellent results are also obtained for the collection of fine and coarser dusts by a combination of an electrostatic precipitator with a mechanical type, installed in series. Other types of equipment are scrubbers, bag-type filters, and cloth screen filters.

12100 APTIC NO. 30077

Crouse, Lowell F. and Donald E. Waid

FUME INCINERATION: EFFECTIVE, EFFICIENT. *Ind. Gas., 51(5):17-20, May 1971.*

The principal industrial processes for which air pollution controls by combustion are suitable are those which involve the use of commercial solvents. These include a variety of drying, baking, and curing operations performed in ovens, dryers, and kilns. The organic solvents vaporized in such processes usually contain various hydrocarbons, alcohols, aldehydes, esters, ethers, ketones, and aromatic compounds. When reviewed as a combustion problem, the incineration of fumes requires just two basic conditions: the combustible elements must be raised to their auto-ignition temperature in the presence of sufficient oxygen to complete the chemical reaction; and they must be held at that temperature long enough for the reaction to occur all the way through to carbon dioxide and water vapor. Among the best designs of incinerators using refractory chambers were those employing conventional tunnel- type gas burners; another method of using tunnel-type burners has a cylindrical refractory combustion chamber fired tangentially by one or more burners. During the past ten years an increasingly larger number of installations have used a sectional line burner, which gives a wide distribution of flame across the stack or combustion chamber, with a corresponding increased opportunity for mixing the effluent with the gas flame for preheating and ignition.

12101 APTIC NO. 30101

Dahlmann, Alois

ANNUAL SURVEY ON CUPOLA FURNACES, SEQUENCE EIGHT. *(Jahresuebersicht Kupolofen, 8.Folge). Text in German. Giesserei (Duesseldorf), 58(10):316-323, May 1971. 56 refs.*

New developments in cupola furnaces are discussed. In all new models, attempts have been made to reduce dust emission. One furnace deserves mentioning because of its interesting concept. Limestone, placed in the upper shaft of the furnace, cools the rising gases very intensely by the extraction of heat for calcination. The gases are sufficiently cooled so that they can be cleaned in a cloth filter. The hot lime is passed to a heat exchanger where air from the blower flows in the opposite direction. In this way a hot blast is produced. The lime is then carried into the furnace, where it aids desulfurization without attacking the lining of the furnace. An additional gas firing system was successfully used in a furnace with a melting capacity of 1.8 tons/hr. The coke charge was replaced to 45% by gas. The melting capacity was increased by 25% at an unchanged temperature; the quality of the iron was not affected. Dust emission was reduced considerably.

12102 APTIC NO. 29499

Daito, Shunichi, Yutaka Kuroda, Yasuo Nakajima, Yoshimasa Hahashi, and Kunihiko Sugihara

PRACTICAL ANALYTICAL METHOD OF EXHAUST REFLUX EFFECT ON NOX EMISSION CONTROL. *(NOx haishutsu seigyo ni kansuru haiki kanryu koka no jitsuyoteki na kaiseki hobo ni tsuite). Text in Japanese. Preprint, Society of Automotive Engineers of Japan, Inc., Tokyo, p. 79-86, 1970. 3 refs. (Presented at the Society of Automotive Engineers of Japan, Inc., Fall Meeting, Tokyo, 1970, Paper 51.)*

In exhaust reflux, a desired method for the control of nitrogen oxides, it is assumed that control depends on the increase of the heat capacity of internal cylinder gas by the reflux gas and on the drop of the maximum temperature of combustion gas. A water cooled 4-cycle and a series 4-cylinder 1600 cc gasoline engine were used. Various gases (Helium, argon, nitrogen, and carbon dioxide) with different specific heats and water (spray with liquid) were introduced into an aspirator tube instead of exhaust gas to determine the effect of heat capacity and gas volume. The engine was operated constantly at 2400 rpm and 65 kg/hr of air. The more effective NO control, the higher the specific heat of the gas. By calculating the composition of combustion gas in order to obtain the heat capacity of the internal cylinder gas, the NO concentration was influenced by the heat capacity of the internal cylinder gas per 1 kg of gasoline. The control of NO by exhaust reflux was stronger than that shown for delaying the ignition time. The exhaust reflux method had the same NOx control effect as the water injection method, and its effect was practically constant after removal of the water in the reflux exhaust.

12103 APTIC NO. 27562

Davis, Edwin R.

FUEL VAPOR ADSORBING APPARATUS. *(Assignee not given.) U. S. Pat. 3,543,484. 3p., Dec. 1, 1970. 4 refs. (Appl. May 24, 1968, 3 claims).*

A fuel vapor adsorbing apparatus is described which prevents the emission of residual fuel vapors from service station storage tanks or motor vehicle fuel tanks. These vapors are undesirable source of air pollution by hydrocarbons. The apparatus includes a vapor return line from which vapors expelled during the filling of the storage tank or automobile fuel tank are returned to the storage tank and passed through cannisters containing granulated charcoal or other suitable adsorbent material.

12104 APTIC NO. 30062

Davis, John C.

PULPERS APPLY ODOR CONTROL. *Chem. Eng., 78(13):52-54, June 14, 1971.*

Total reduced sulfides from the pulping industry, composed mainly of hydrogen sulfide, can be detected by the human nose at a concentration of 1-5 ppb. To get below the threshold for smell at ground level, the stack concentration of total reduced sulfides cannot be much more than 1-5 ppb. To reduce H2S emissions, Babcock and Wilcox has designed out the evaporator. The three main design changes in the recovery boiler are: an increased reliance on forced circulation of liquor through the exchangers; a revised tube-surface arrangement to offset sealing and poorer rates of heat transfer; and a steam pressure limit of 35 psig coming into the multiple-effect train. The Combustion Engineering Corp. offers five recovery boiler designs that can be tailored to fit a specific pulpmill. Despite its economy, oxidation has been abandoned in many pulpmills in the southern U. S. due to excessive foaming in weak black liquor. However, the tonnage oxidation system, operated by Owens-Illinois, reportedly has solved this problem; a 94-97% efficiency is claimed in converting sulfides to thiosulfates. Western Kraft Corp. has introduced another type of stack gas cleaning, namely, scrubbing with a weakly alkaline wash liquor.

12105 APTIC NO. 30091

Davydov, A. A., Yu. M. Shchekochikhin, and N. P. Keier

INFRARED SPECTROSCOPIC STUDY OF THE CATALYTIC OXIDATION OF CARBON MONOXIDE TO CARBON DIOXIDE ON MANGANESE DIOXIDE. *Kinetics Catalysis (USSR) (English translation from Russian of: Kinetika i Kataliz), 11(5):1019-1023, Sept.-Oct. 1970. 7 refs.*

The formation and transformation of surface compounds in the oxidation of carbon monoxide on manganese dioxide have been studied by infrared spectroscopy. The reaction was found to take place with the participation of adsorbed oxygen and gaseous CO; these form carbonate structures of different types, which decompose with the formation of carbon dioxide. The desorption temperature of the carbonate structures is lower when the reaction is carried out under static conditions than when the oxidation is carried out in the adsorbed layer. (Author abstract)

12106 APTIC NO. 29831

Descolas, Jean

DUST COLLECTING SYSTEMS IN CEMENT WORKS. *(Odprasovaci zarizeni v cementarnach). Text in Czech. Stavivo, 49(2):50-53, 1971.*

Various dust sources in the modern cement industry are discussed. French laws and regulations control dust emissions. Also, various dust collectors, methods, and apparatus for inspection, control, and measurement are discussed.

12107 APTIC NO. 29772

Donoso, Julius J.

BAGHOUSE OPERATION AT THE WHITING, INDIANA PLANT OF THE FEDERATED METALS DIVISION AMERICAN SMELTING AND REFINING COMPANY. *Smoke Prevention Assoc. of America, New York, Proc. Smoke Prevent. Assoc. Am. Conv., 41st, 1948, p. 1-8. (June 7-11.)*

The history and operation of bag filters are discussed. The baghouse at the Whiting, Indiana Plant of the Federated Metals Division of the American Smelting and Refining Company embodies the latest advances. Present capacity of the house is 416 bags with a filtering rate of 93,000 CFM at 210 F. Two chambers separate the zinc brass department smoke from the high lead department smoke. The draft required in the flues is determined by the number of furnace units operating in each department. The bags can be shaken mechanically, and the fume can be recovered. Since wool bags lose their pliability at elevated temperatures, the gases are properly conditioned before filtering. Also, the gas is sprayed with water for cooling. The modern control room contains instruments for recording fan discharge pressure, flue draft and temperature, and for controlling the automatic water sprays and air inlet dampers. The clean waste gas is discharged into the atmosphere through a 300 foot stack.

12108 APTIC NO. 28791

Dratwa, Heinrich

MEASUREMENT DATA OBTAINED FROM EXPERIMENTS WITH THE DYNA-VANE HIGH CAPACITY DRY TYPE DUST SEPARATOR. *(Messergebnisse aus Versuchen mit dem Dyna-Vane Hochleistungs-Trocken Abscheider). Text in German. Staub, Reinhaltung Luft, 31(2):57-60, Feb. 1971.*

The Dyna-Vane high-capacity, dry type dust separator is a mechanical air filter for air conditioning plants, ventilating systems, and for the combustion air of turbines. The separator, which is assembled from prefabricated parts, needs servicing. The inertia of the dust particles and the sweeping force of the fraction of unfiltered air determine the deposition of dust. The construction and method of operation of a particular element are explained. Results are reported for experiments concerning the influence of air-flow rate, the fraction of the concentrate air, and dust composition on efficiency. Economic aspects of the separator are considered.

12109 APTIC NO. 30121

Dunn, Richard L.

TFE-FLUOROCARBON FIBER FILTER BAGS--IT COSTS MORE TO GO FIRST CLASS. *Plant Eng., 25(11):56-57, May 27, 1971.*

Typical properties of TFE-fluorocarbon (teflon) filters are summarized and discussed. Among the properties that would seem to make the filters ideal for baghouse use are their resistance to chemicals and high temperatures and their cleaning ease. In practice, the application of the filters is limited by their high initial cost. Their use appears economically justified for copper smelters, clay manufacturing operations, terphthalic acid production, and carbon black collection. Other companies are obtaining some of the benefits of fluorocarbon fiber by using cuffs of the material on the bottoms of glass fiber bags.

12110 APTIC NO. 30044

Dyla, John Florian

IMPROVEMENTS IN OR RELATING TO ELECTRO-PRECIPITATORS. *(Lodge- Cottrell, Ltd., Birmingham (Great Britain)) Brit. Pat. 1,157,602. 7p., July 9, 1969. (Appl. March 10, 1966, 3 claims).*

Mounting the discharge electrodes in the electro-precipitation of small particles such as dust from gases sometimes presents problems such as the uneven expansion of the electrodes due to different temperature conditions. Therefore, this invention provides an improved electro-precipitator discharge electrode arrangement. The invention includes an arrangement of an elongated mast member, support member, and resilient clip for the discharge electrode and a plurality of collector electrodes, sets of discharge electrodes, and support members. Drawings and a detailed specification are given. This arrangement allows for movement of the mast member against frictional resistance resulting for the urging action of the clip.

12111 APTIC NO. 29908

Egi, Kozo

DIRECT DESULFURIZATION OF HEAVY OIL. *(Juyu no chokusetsu datsuryu gijutsu). Text in Japanese. Kokuritsu Kenkyujo no Kenkyu Seika (Researches of Government Research Inst.), Dec. 1969, p. 291-292. 3 refs.*

In order to clarify the reactivity of metal and other components in the residual oil, the electron spin resonance method was used to study the residual and desulfurized oils together with the deposit on the catalyst. As the oils were heated in either a vacuum or air, the free spin density increased and vanadyl compounds decreased due to the carbonization of macromolecules such as the polycyclic aromatic condensates. The cobalt-molybdenum base alumina catalyst was covered by carbonaceous or free-spin substances after use due to the thermal or catalytic cracking of aromatic condensates of large molecular weights followed by carbonization on the surface of the catalyst. The vanadium content of the residual oil deposited on the catalyst was partially in the form of the vanadyl radical. The degradation of the catalyst activity, monitored by the change in the desulfurization rate, was remarkable during the initial period of reaction. An extremely close correlation was found between the degradation and the carbon deposit: the more the deposit, the more the catalyst degradation. No such correlation was observed with the vanadium or nickel deposit. The primary cause of catalyst damage was concluded to be the carbonaceous deposit, with the metal deposits having only slight effects on catalytic activity. Other evidence however, suggests that after 50 hrs of reaction, the metal deposits become the primary cause of the damage.

12112 APTIC NO. 29659

Ehrlich, Arthur and C. R. Swenson

POLLUTION REGULATIONS AND THEIR EFFECT ON VEHICLE PREPARATION. *Am. Paint J., 55(44):18-24, April 19, 1971.*

Cold blending of durable coatings offers many advantages over vehicle cooking both as a consequence of the enforcement of air pollution control regulations and because of certain innate product characteristics. In the first place, cold blending is more economical as a production process. No heat is needed for the desired reaction and, consequently, no varnish cooking equipment is required, only simple mixing operations. Because room temperatures are involved, the formulator eliminates the three to 10% loss in volatiles associated with cooking. In addition, low cost and low toxicity aliphatic and aromatic solvents are employed in the solubilizing operation. Vehicles based on the new oil polymer in anti-corrosive paints have better drying; toughness; durability; and chemical, alkali and water resistance than those based on linseed oil and alkyd.

12113 APTIC NO. 29496

Eko, Naomi, Nobuo Inagaki, and Yasukazu Naoi

ON CONDITIONS FOR PROPER USE OF ACTIVATED CARBON AS AN AIR PURIFICATION AGENT (2) - ITS EFFICIENCY FOR REMOVAL OF SO2 GAS. *(Kuki seijozai to shiteno kasseitanson no tekisei shiyo joken ni tsuite (2) - SO2 gasu no jokyo koka). Text in Japanese. Preprint, Japan Society of Air Conditioning Hygienic Engineering, Tokyo, 4 p. 1971. 1 ref. (Presented at the Air Conditioning Refrigeration Societies Joint Meeting, Tokyo, Japan, April 20-21, 1971, Paper 7.)*

The effects of surface wind velocity, the density of sulfur dioxide the quantity of dust and the humidity on the purification efficiency of activated carbon were examined. For measurement of SO2 gas density, both the electroconductivity method and gas detector tube were employed. The results showed a relationship between the purification efficiency and the surface wind velocity, humidity, quantity of dust or duration of use. The purification efficiency increase as the surface wind velocity decreased. In the earlier stage of use, the purification efficiency was affected by humidity but this effect was small when the filter material was used for long periods. The purification efficiency increased when the feed-in quantity of dust increased. However, the trend could be opposite for other kinds of dust, so the use of a dust collector is still recommended. The purification efficiency decreased with an increase in SO2 density up to 20 ppm but remained constant from 20 ppm and up. The life test of activated carbon was conducted with a SO2 gas of four different densities. The life is shorter when the SO2 density is lower, but there is not a proportional relationship between the two.

12114 APTIC NO. 29877

Elliot, Thomas C.

ODOR CONTROL: ITS TIME IS COMING. *Power, 115(6):S 12-S 13, June 1971.*

Leading industrial odors, their sources and means of control are identified. Unlike the situation existing in most phases of pollution control, effective measures abound for odor abatement; but analytical limits are still in a state of flux due to the questionable nature of odor-measurement techniques. This long-standing deficiency will be corrected, probably within a year, when the Environmental Protection Agency releases recommended limits for a broad range of obnoxious pollutants. Local ordinances, moreover, are becoming more specific and quantitative, defining excessive odor intensity in several instances in terms of the number of volumes of odor-free air required to dilute one volume of odorous air to unobjectionable levels, and rating as unacceptable any odor found objectionable by a percentage (usually 30%) of people exposed to it. The odor control methods discussed include combustion, absorption, ozonation, masking and counteraction. Advantages of each method are indicated.

12115 APTIC NO. 29730

Emi, Jun, Kiyoshi Nakada, Naoya Yoshioka, and Chikao Kaneoka

FILTRATION OF MULTI-DISPERSING AEROSOL UNDER THE FORCE OF GRAVITY. *(Juryokuka ni okeru tabunsan earozol no roka). Text in Japanese. Preprint, Japan Society of Chemical Engineering, Tokyo, 2p., 1970. 1 ref. (Presented at the Japan Society of Chemical Engineering, Autumn Conference, 4th, Hiroshima, Japan, Oct. 6-8, 1970, Paper F118.)*

The filtration of aerosol particulates ranging from a few micron to 10 micron in size were studied. Since the dust arresting mechanism is affected more by gravity than by diffusion when the linear velocity is small, the coefficient of the gravitational inertia screening effect was calculated and compared with that for the partial separation efficiency obtained from the experiment using a multi-dispersing aerosol. The multi-dispersing aerosol was a styrene divinyl benzene copolymerized latex of a grain size ranging from 3 to 13 micron which was dispersed into the air through an atomizer for mixing. The aerosol flowed vertically through a filter with glass fiber layers. Each layer was very thin and a volatile solution of adhesive material was applied in order to prevent the rebounding and rescattering of the aerosol particulates. The number and grain size distribution of the particulates were determined from microscopic photos. A histographical indication of the grain size distribution observed at the entrance and the exit of the filter layer is shown. The formulas to calculate the partial separation efficiency and the theoretical coefficient of the gravitational inertia screening effect were given. The values for the dust collection efficiency were compared with the theoretical values by drawing curves which indicated that the experimental values were 10% lower than the theoretical values, but the trend was similar. A comparison was also made on the efficiency measured by the grain size, 5-11 micron indicating a similar trend for both the experimental and the theoretical. The curve for the experimental was lower by 1 micron than for the theoretical.

12116 APTIC NO. 30011

Epperlein, Helmut

STUDIES OF VENTILATORY MEASURES INDOORS AGAINST POLLEN ALLERGY. *(Untersuchungen ueber lueftungstechnische Massnahmen in Wohnraeumen gegen die pollenallergie). Text in German. Gesundh. Ingr., 92(5):134-140, 1971. 14 refs.*

Pollinosis is caused primarily by pollens containing highly sensitizing antigens which are light-weight and produced in large quantities. In Europe, some grasses and grains produce allergenic pollens, such as secale cereale with 60,000 pollen grains per blossom. The size of the pollen grains ranges from 20 to 45 microns; the smallest are 2 microns. The pollen concentration of the air depends on the blooming period of the plants and on such meteorological conditions as sun radiation, air temperature, relative humidity, precipitation, wind velocity, and wind direction. For persons allergic to pollen, a pollen-free atmosphere can be created indoors through the installation of filters. Experiments were conducted in a 100 sq m apartment with a Fischbach compact blower and a fiber filter which retains particles to 0.7 micron. The maintenance of a pollen-free atmosphere at slight overpressure was studied. If the doors and windows do not seal tightly, the air pressure indoors must be at least as high as the pressure outside on the windward side of the house. If the air intake of the ventilator is on the leeward side of the house, the differential pressure between the windward and leeward sides must be compensated by the pressure head.

12117 APTIC NO. 29896

Eremenko, N. K., K. I. Metveev, L. N. Rachkovskaya, S. K. Katanakhova, and L. F. Metgunova

CATALYTIC OXIDATION OF CARBON MONOXIDE IN THE PRESENCE OF RECENTLY SYNTHESIZED PLATINUM COMPLEXES. *(Katalicheskoye okisleniye okisi ugleroda v prisutstvii novykh kompleksnykh soyedineniy platiny). Text in Russian. Kinetika i Kataliz, 12(1):147-151, 1971. 7 refs.*

The catalytic properties of platinum monocarbonyls (of the type Pt(CO) (HX)2, X equals Cl,Br,I) in the reaction of oxidation of carbon monoxide by Fe(3+) were studied. The reaction was carried out in a batch reactor with circulating gas phase. The preparation of platinum monocarbonyl and of the experiment are described. In the range of studied catalyst concentrations, the reaction was of first order with respect to the catalyst and to CO, and of minus first order with respect to chloride ions. The empiric kinetic equation for reaction rate was derived. The reaction rate did not depend on the Fe(3+) concentration, which was explained by the participation of Fe ions in the reaction in a step following after the rate-determining step. The spectral analysis revealed that platinum monocarbonyl in a CO atmosphere is converted to dicarbonyl, which reacts rapidly with Fe(3+) to regenerate monocarbonyl, so that dicarbonyl does not accumulate. A reaction mechanism is proposed with the limiting step the entry of CO into platinum monocarbonyl. The catalytic activity of Pt(CO) (HX)2 decreased for X in the order Cl(-), Br(-), I(-).

12118 APTIC NO. 30048

Feldmann, H. F., W. H. Simons, J. J. Gallagher, and D. Bienstock

KINETICS OF RECOVERING SULFUR FROM THE SPENT SEED IN AN MHD POWER PLANT. *Am. Chem. Soc., Div. Fuel Chem. Preprints, 13(2):13-26, 1969. 7 refs. (Presented at the American Chemical Society Division of Fuel Chemistry, Joint Symposium on Fuel and Analytical Chemistry, Minneapolis, Minn., April 13-18, 1969.)*

Because of the high affinity that potassium or cesium seeding materials have for sulfur and their easy regeneration, sulfur can be profitably recovered from an open-cycle magnetohydrodynamic power plant. The sulfur with hydrogen (as hydrogen sulfide) can be removed from the seed-slag mixture, thus leaving a sulfur-free effluent gas. A slag-seed mixture was simulated and reacted with hydrogen. Then the sulfur removal rate was calculated from a formula. A kinetic model was formulated from the experimental observations. The reaction rate and maximum conversion level depended on temperature. The model was applied to the regeneration of alkalized alumina; similar techniques for regenerating alkalized alumina can be used to remove sulfur from seed-slag mixtures. The economic feasibility of sulfur removal from recycling seed-slag mixtures was also discussed.

12119 APTIC NO. 29837

Fife, J. A.

AIR POLLUTION TEST METHODS COMPARED IN INCINERATOR EVALUATION PROGRAM. *Public Works, 102(6):56-59, June 1971.*

A test program was undertaken to compare the gas cleaning efficiencies of two types of flooded baffle systems applicable to incinerators. Efficiency determination required that simultaneous measurements be made of particulate concentration at both the upstream (furnace outlet) and downstream (stack) sides of the baffle. The test program also provided an excellent vehicle for the comparison of older and newer methods of flue gas sampling. Different refuse characteristics, stoker types, and combustion air input rates could be expected to affect the amount of fly ash leaving the furnace, its particle size distribution, and therefore its collectability. The program then included data collection on these variables, and this provided an opportunity for the determination of the fractional efficiency of the two baffle systems.

12120 APTIC NO. 30117

Flewelling, F. J.

LOSS OF MERCURY FROM CHLORALKALI PLANTS. *Chem. in Can., 23(5):14, May 1971. (Presented at the Royal Society of Canada, Symposium on Mercury in Man s Environment, Montreal, Quebec, Feb. 1971.)*

Approximately 60% of the chlorine and caustic soda manufactured in Canada is produced by the mercury cell process, the remainder by a diaphragm cell process in which mercury is not involved. Starting in 1970, the mercury cell plants undertook extensive modification to reduce mercury losses in products, in solid wastes, to the atmosphere, and to sewers. Typical abatement methods are reviewed, and the extent to which they reduce losses indicated. The methods include filtration, sulfide precipitation, cooling of hydrogen, mist elimination, and restricted use of water. The mercury emission limit per ton of chlorine produced is 0.005 lb/ton, effective Sept. 1, 1971.

12121 APTIC NO. 29719

Fraser, Malcolm D. and Allen E. Somers

ASPHALTENE HYDRODESULFURIZATION WITH SMALL CATALYST PARTICLES DISPOSED IN A GUARD CHAMBER-MAIN REACTOR SYSTEM. *(Gulf Research and Development Co., Pittsburgh, Pa.) U. S. Pat. 3,563,887. 15p., Feb. 16, 1971. 5 refs. (Appl. Oct. 25, 1968, 13 claims).*

A process is described for the hydrodesulfurization of a crude oil or a reduced crude oil in the presence of a supported Group VI and Group VIII metal catalyst having an exceptionally small particle size. Substantially all or a large proportion of the catalyst particles of the present invention have a diameter of between 1/20 and 1/40 inch. Although nickel-cobalt-molybdenum is the preferred active metals combination for the catalyst, other combinations can be utilized such as cobalt-molybdenum, nickel-tungsten, and nickel-molybdenum. Alumina is the preferred supporting material but other noncracking supports can also be used, such as silica alumina and silica magnesia. The apportioning of the total catalyst between the guard chamber and the main reactor and the frequency of renewal of the guard chamber are established according to the disclosed equations to minimize the pressure drop across the catalyst by maintaining on stream at a given time a minimum proportion of the total catalyst. Unexpected temperature advantages are achieved by employing catalyst particles with diameters as described. (Author abstract modified)

12122 APTIC NO. 29840

Fujii, Shoichi, Keiichi Imamo, Shin Yoshizawa, Kikuji Kimura, and Koyo Maekawa

REPORT ON THE INVESTIGATION INTO THE MAINTENANCE AND THE SUPERVISION OF AIR-CLEANING APPARATUS AS AN INDICATION OF AIR POLLUTION. *(Taikiosen taisaku to shite no kuki seijo sochi no iji kanri ni kansuru kenkyu kokokusho). Text in Japanese. Japan Air Cleaning Assoc., 42p., March 1970.*

In order to obtain some data for the establishment of standards for the maintenance and the supervision of air-cleaning apparatus, several investigations and experiments were made. The general state of air-flow control equipment, the types and the states of maintenance, and the supervision of air-cleaning apparatus were investigated at 50 Tokyo offices with an area greater than 3000 sq m. Air circulation was generally effected by a single duct (in over 43% of the cases), followed by fan-coil units, and separate floor-by-floor units in descending order of use frequency. In half the cases, the equipment was of the panel type and the fitrating material was synthetic fiber. In 86% of the cases, the interchangeable units in the air-cleaning apparatus were exchanged at fixed intervals. Ducts were set up at four places in Tokyo to determine the deterioration of the test air-cleaning apparatus due to airborne dust. The integrated amount of pollution (daily average dust concentration times average rate of flow times filter area times operating time times (3600) was in proportion to the amount of dust retained. An increase in the integrated amount of pollution led to decreasing pressure. The loss of pressure, the wind speed, and the rate of retention of an actual air cleaning apparatus were measured. It was difficult to accurately estimate the probable effective life of the filtrating materials directly from the initial rate of retention and drop in pressure, although they are usually used for such estimations.

12123 APTIC NO. 29481

Fujine, Kazuhiro

DUST COLLECTOR FOR ELECTRIC FURNACE MANUFACTURING FERROALLOY. *(Feroaroi denkiro shujin sochi no jitsuyo bani). Text in Japanese. PPM (Japan), 2(4):39-46, April 1971.*

The ferroalloy industry is an air pollution source because the exhaust fume from the electric furnace contains a small amount of sulfur dioxide gas, a large amount of dust such as silicon compounds, and relatively little carbon monoxide which appear as white smoke. The fundamental planning for a precipitator, the type selection, and the glass bag filter are discussed. The relationship between gas amount and temperature is the most important factor of ferroalloy furnace design. The dilution coefficient of theoretically generated gas has been estimated at 50-100, which is not effective for the actual furnace design. High dilution needs a large scale precipitator, while the small precipitator is the origin of the remaining gas. Designs must consider the load electric power, scale of generator, and collection efficiency of silicon compounds. The unit of Cu Nm/kw h is used for gas amount. The application is also an important facto of the design. Although the closure of an electric furnace is ideally required, it is not yet realized for metalic silicon. Information about dust characteristics is indispensable, and of all metal-alloys the silicon compounds cause most trouble. The easiness of dust collection drops in the following order: chromium, calcium, iron, and magnesium compounds. Also, the electrostatic resistance rises with the rate of silicon dust. Sulfur oxides in the fume cause metal corrosion and dust adhesion, especially with water. Using a glass bag filter at a temperature above the dew point limits this effect. A bag filter or an electric precipitator are effectively used for dust collection in ferroalloy manufacturing.

12124 APTIC NO. 29600

Fujino, Tomiji and Shuntaro Yoshimochi

OUTLOOK OF ENVIRONMENTAL POLLUTION AND ITS PREVENTION TECHNOLOGY. *(Kogai mondai to boshi gijutsu no tenbo). Text in Japanese. Mitsubishi Joko Giho (Mitsubishi Heavy Ind. Tech. Rev.), 8(2): 170-178, March 1971. 20 refs.*

With petroleum rapidly replacing coal as a source of energy in recent years, the most important air pollutant has changed from dust to sulfur oxides. Rapid motorization plus the concentration of population in particular industrial districts further aggravates air pollution with hydrocarbons, carbon monoxide, lead compounds, and nitrogen oxides. The use of low-sulfur fuel, especially low-sulfur petroleum, is one of the most effective and economical methods to prevent air pollution. Petroleum fuel now accounts for approximately 70% of Japan s energy source and is expected to continue increasing. According to government policy, the sulfur content of fuel oil for densely populated areas should be reduced to 1% by 1973 and to 0.55% by 1975. The problem is the limited supply source of low-sulfur petroleum. Another solution is use of LNP fuel, which is again hampered by an unstable supply. Two LNG boilers, each 350 MW in power generation capacity, are now operating in one of Tokyo s thermal power plants. Various smoke desulfurization methods include the ammonium sulfate method, Soda-Glauber s Salt Method, the lime-gypsum method, the CE method, the Wellman-Lord method, the UK-W method, and the sulfacid method. The DAP-Mn method is a dry desulfurization method using manganese oxide as an absorbent. It can be readily designed to obtain either ammonium sulfide or gypsum as its by product. The improvement of the combustion method, dust collection devices, chimney and smoke diffusion prediction by means of a wind tunnel were briefly discussed. The prospect for demand of environmental pollution prevention equipment was given.

12125 APTIC NO. 29830

Funke, Gerhard

PROGRESS IN DEDUSTING TECHNIQUE IN CEMENT WORKS. *(Pokroky v technice). Text in Czech. Stavivo, 49(2):54-62, 1971. 10 refs.*

Dust sources from cement works in the German Federal Republic are discussed, with information on construction, properties and operation of electric separators, cloth filters, and layered filters. Special attention is paid to dust collecting systems in clinker storage and in the breakdown or start-up of plant equipment. Also, the treatment of waste gases from rotary kilns fitted with dispersive heat exchangers and with modern evaporating coolers is discussed.

12126 APTIC NO. 29808

Galbreath, Richmond B., Roger P. Van Driesen, Axel R. Johnson, and Seymour B. Alpert

H-OIL AS A TOOL FOR LOW SULFUR FUEL PRODUCTION. *Preprint, Japan Petroleum Inst., Tokyo, 21p., 1970. (Presented at the Symposium Fuel Oil Desulfurization, Tokyo, Japan, March 10-11, 1970.)*

H-Oil designed specifically for the reaction of hydrogen with heavy oils, handles the cracking of residual oils into distillate fractions. It is also used in the desulfurization of residual oils and in the hydrogen upgrading of those distillates which would cause problems in conventional fixed bed operations. The process can withstand the high heats of reaction that accompany most of the applications, allows passage of extraneous material through the catalyst bed without plugging, provides for uniform distribution of reactants and efficient contact, and is capable of long periods of operation without shut-down. The H-Oil process uses an ebullated bed; its primary advantages are isothermal reactor conditions, no pressure drop buildup, and on-stream catalyst addition and withdrawal. Pilot plant and commercial experience are described.

12127 APTIC NO. 29621

Galeano, S. F., D. C. Kahn, and R. A. Mack

AIR POLLUTION: CONTROLLED OPERATION OF A NSSC RECOVERY FURNACE. *TAPPI, 54(5):741-744, May 1971. 10 refs. (Presented at the Technical Association of the Pulp and Paper Industry, Engineering Conference, Denver, Colo., Oct. 25-29, 1970.)*

Gaseous sulfur emissions from a kraft recovery furnace used in a neutral sulfite semichemical (NSSC) recovery system can be minimized by changes in operating variables. It is possible to obtain close to zero emission of total reduced sulfur by using proper distribution and quantities of primary and secondary airflows. Thermodynamics of the combustion and a scale of turbulence permit estimating those quantities. The sodium-to- sulfur weight ratio of the liquor fed to the furnace (in the 2-3 units range), is inversely proportional to the amount of sulfur dioxide, released from the furnace. Adequate recording instrumentation in the process streams is essential in achieving the desired results. New recovery furnaces for NSSC processes can be expected to achieve the same degree of pollution control as new ones used in the kraft process. (Author abstract)

12128 APTIC NO. 29562

Gallet, M.

STUDY OF DUSTINESS AND PURIFICATION OF AIR IN A QUARRY. *(Etude de l empoussierage et de la purification de l air dans une carriere). Text in French. Lab. Central des Services Chimiques de L Etat, Paris (France) and Inst. National de Securite pour la Prevention des Accidents du Travail et des Maladies Professionnelles, Paris (France), Colloq. Securite Sociale Serv. Prevent., 3rd, Paris, France, 1955, p. 97-101. (Nov. 3-5.)*

Equipment for dust removal was installed in a slate quarry in northern France, cleans air from six dust generating areas; the air enters the apparatus through a common header at the rate of 4200 liters per second. The apparatus consists of a housing of sheet steel which contains water in its lower part, and is divided into three compartments by internal partitions. The dust-laden air enters the lower part of the housing, where it has to pass through the water, and then is forced by an aspirator-fan to flow upwards through a water spray formed by an S-shaped oscillating member, then through a fine mashed screen, and out into the open. The dust particles are partly retained in the bath, but mostly by the spray which causes the formation of dust-enveloping droplets which are deflected by one side of the oscillating member, and held back by the screen, to eventually return to the bath where the dust settles at the bottom of the housing from where it is periodically removed by a scraping device. The apparatus is efficient; air entering with a dust content of about ten million particles per liter less than three microns in diameter left the apparatus with a particle content of less than one million per liter.

12129 APTIC NO. 30043

Garlet, Robert

ELIMINATION OF OXIDES CONTAINED IN CERTAIN RESIDUAL INDUSTRIAL GASES. *Preprint, National Industrial Nitrogen Office (France), 1968 (?). Translated from French. 7p.*

The determination of nitrogen oxides is difficult in the course of nitric acid synthesis by ammoniac oxidation. Recently a process has been developed which destroys nitrogen oxides by reducing them catalytically at about 400 C. However, this requires large investments and a lot of equipment, and it is difficult to resolve this problem economically because of the large quantities of water vapor in the residual gases. A new invention washes the gases at ordinary temperature and pressure, is more economical, and emits a nitrogen dioxide content of less than the toxicity threshold (10 ppm). Ammonia solutions can be used to purify gases with sulfurous and anhydride by reacting to form ammonia sulfate. The molor bisulfite/sulfite ratio of the washing solutions should not exceed 0.1 to 0.4. The gas flow can be 1300 to 1500 volumes of gas per useful volume of washing. Treated gases are practically odorless and colorless; a mist of white vapor can be eliminated by electrostatic precipitation. Then ammonia sulfate can be crystalized and extracted.

12130 APTIC NO. 30104

Goryachev, I. K.

FILTER FOR COLLECTING CARBON BLACK. *Soviet Rubber Technol. (English translation from Russian of: Kauchuk i Rezina, 28(12): 46-47, Dec. 1969.*

An experimental bag filter for collecting fine carbon black particles from a carbon black/gas mixture was developed with two filter sections consisting of cells for purified and unpurified gas. The cells were formed by sewing together panels of fabric and stretching them on a special frame. In the upper part of the filter, a purified gas collector contains air-distributing tubes with nozzles on the same axis as the cells for the purified gas. The air-distributing tubes are connected, through an electromagnetic valve, to a receiver of compressed air. When a certain hydraulic pressure is reached, the electromagnetic valve is activated and bursts of compressed air pass into the distribution tubes. The jet of air ejects the purified gas in the collector into the cavity of the shell. When the fabric is shaken, simultaneous back-flow occurs. During nine months of operation, no clogging of the cells with carbon black was observed. The average degree of contamination at the exit from the filter was 0.01 g/cu m, and the optimum rate of filtration was 1.0 m/min. The filter can be used to purify air at temperatures not exceeding 70 C.

12131 APTIC NO. 30088

Hagen, Hans

FIRST RESULTS WITH THE M.A.N.-EXPERIMENTAL GAS TURBINE FOR COMMERCIAL VEHICLES. *(Erste Ergenbnisse mit der M.A.N.- Versuchsgasturbine fuer Nutzfahrzeuge). Text in German. Automobiltech. Z. (Stuttgart), 73(5):153-161, May 1971.*

The problems of air pollution from gas turbine exhaust gases are easier to solve than those from the piston engine. An experimental turbine without a heat exchanger was tested by drawing air through two paper filters and a muffler into the radial condenser which rotated at a maximum of 42,000 rpm. The air was compressed to 5.4 atmospheres and simultaneously heated to 290 C. Combustion took place in a single-pipe combustion chamber at a total air ratio of four. Then the operating gas at 920 C, flowed through the two turbine stages of the generator. A single stage axial turbine rotating at a maximum of 38,100 rpm was operated. The waste gas was emitted at 550 C after it had passed through two mufflers. A comparison of the exhaust gas composition with that of diesel engines revealed that the reduced emission concentrations for carbon monoxide and hydrocarbon were about the same. The nitric oxide emissions, however, were considerably lower with the gas turbine (160 ppm in the gas turbine compared with 900 to 1500 ppm in the diesel engine at a nominal rpm of 50%). Even lower NO emissions could be achieved by further improvement of the gas turbine.

12132 APTIC NO. 298360

Hambric, James C.

INTERNAL COMBUSTION ENGINE EXHAUST SYSTEM. *(K.M.F. Development Corp., Los Angeles, Calif.) U. S. Pat. 3,563, 213. 7p., Feb. 16, 1971. 9 refs. (Appl. June 27, 1968, 5 claims).*

A rotary engine is described, in which a pair of synchronized rotors are driven by combustion to turn in intersecting, annular passages, the combustion gases expanding in spaces defined between a radially extending lobe of the rotors and the walls of the annular passages. In general, engines of this type are capable of vibration-free operation in a number of different applications, such as compressors, pumps, and internal combustion engines. The reciprocating components can be substantially eliminated from such engines with the result that they may be operated on a prolonged maintenance cycle with improved economy over engines of the various types currently in widespread use. However, unless auxiliary apparatus is provided, a residual quantity of combustion gas tends to remain in the engine thereby limiting the nature of a fresh combustion charge. The present system utilizes exhaust nozzles, flow control valves, and gas flow spoiler structures to effectively remove the products of combustion from the engine preparatory to the acceptance of fresh combustion charges. (Author abstract modified)

12133 APTIC NO. 29733

Hara, Haruichi

NEW METHOD OF MANUFACTURING CATALYST FOR EXHAUST GAS. *(Haiki gasu henkanyo shokubai no seizo hoho). Text in Japanese. (Catalyst Chemical Industry Co. (Japan)). Japan. Pat. Sho 45-39618. Dec. 12, 1970, 5p. 1 ref. (Appl. April 1966, claims not given).*

A method of manufacturing catalysts for exhaust gases containing imperfectly burned hydrocarbon was invented. The catalyst oxidizes CH and CO present in the exhaust gas from the internal combustion engine. Copper oxide is mixed with aluminum hydroxide so that the copper oxide is 5-30% by weight in the completed catalyst. The mixture is molded into tablet form and sintered. The molded catalyst can increase the carrying amount of catalyst so that not only its surface but its inside can become activated. Aluminum hydroxide is very cheap compared with activated alumina. When aluminum hydroxide is partly replaced by an inorganic acid, such as nitric acid or hydrochloric acid, or an acid radical of an organic acid, such as acetic acid, oxalic acid, or maleic acid, the aluminu hydroxide becomes a more active catalyst. It is desirable to add alumina sol. Both cuprous oxide and cupric oxide can be used, but the fine powder of cuprous oxide is best. The size of tablet is 1.5-8 mm in diameter and 2-15 mm in length. The molded catalyst dries at less than 200 C, is sintered for 1-2 hrs at 200-300 C, for 2-4 hrs at 500-800 C. When the carrier is sintered, dehydratio of the hydroxyl group occurs and the physical combination of the carrier becomes stronger, so that a catalyst with strong mechanical strength is obtained. During resintering, it becomes activated. More than one metal, such as vanadium, platinum, nickel, cobalt, chrome, kalium, silver, and tin can be added to within 15% of the weight to the completed catalyst, before the manufacture of the catalyst, or during its manufacture in the form of an oxide, hydroxide, or salt to make the catalyst more effective.

12134 APTIC NO. 29001

Hasenclever, Dieter

12135 APTIC NO. 29940

Hashizume, Minoru, Takeshi Iwasaki, and Kuro Shimoto

METHOD TO ARREST AND REMOVE WHITE SMOKE PRODUCED FROM MOLTEN ZINC PLATING PROCESS. *(Yoyu aen mekki purosesu kara hassei suru hakuen no haiki hoshu jokyoho). Text in Japanese. Preprint, Japan Society of Chemical Engineering, Tokyo, 3p., 1971. 1 ref. (Presented at the Japan Society of Chemical Engineering Convention, Annual, 36th, Tokyo, Japan, April 2-5, 1971, Paper E313.)*

Equipment designed for the disposal of white fumes discharged from a melting kiln used in the batch type molten zinc plating process consists of a local exhaust hood, an exhaust duct, a fume/dust arresting device, and an exhaust blower. The white fume is produced in large quantities from thermal cracking of the flux when materials which are surface-treated with the flux are immersed in molten zinc for plating. It is also produced in large quantities as fumes of ammonium chloride when the NH4Cl powder is applied for additional treatment. The white smoke ascends with an ascending hot air current while diffusing. If a high canopy hood is used to arrest the white fume, it will require a tremendous exhaust wind volume which will in turn require a high-cost investment in a larger exhaust duct, dust collector, and exhaust blower. With the new equipment, this problem is solved by using local exhaust hoods combined with baffle plates and provided with slots. As a result, safety and sanitation problems caused by the white smoke are eliminated and the work efficiency is increased by 30%. Prior to designing the fume and dust arresting device, analysis of the white fume with amorphous filter paper, high-volume sampler, X-ray diffraction, impinger, ion analyzer, cascade impactor, and electron microscope showed its chemical composition to be mostly crystaline particulates of 3NH4Cl, ZnCl2, Zn(NH3)Cl2, NH4Cl2, and ZnO. It also contains a small amount of NH3 gas and H2O steam. The density of the fume particulates in the gas was 142 mg/cu m on the average and 1278 mg/cu m at a maximum. A total of 97-98% of the particulates was of sub-micron size, 1 micron or smaller. Of the sub-micron size particulates, the 0.4-micron size accounted for 51-54%. The fume particulates include ZnCl2 which is highly moisture-absorbent and easily condensed and solidified through reaction with the water in the air. These characteristics of the white fume make any inertial-type dust collection method impractical. The only applicable methods are either filtration or electrical dust collection. For economic reasons, the filtration method comprising a special device to prevent the filter cloth from becoming clogged with the arrested particulates was used with the equipment.

12136 APTIC NO. 29501

Henke, A. M.

GULF RESIDUAL OIL HDS PROCESS. *(Gulf zanyu HDS purosesu). Text in Japanese. Sikiyu Gakkai Shi (J. Japan Petroleum Inst., Tokyo, 14(3):181-183, March 1971.*

The Gulf residual oil process (HDS) is treated in outline. Noted are the necessity of residual oil desulfurization, the history of the HDS process, results of a pilot-plant experiment, and an example of plant operations. In the early 1940 s, Gulf recognized the necessity of desulfurizing petroleum distillate and residue; since then, the Gulf Research and Development Company has progressed from basic research to the developmental stage. Desulfurization of the distillate is comparatively easy, and that of residual oil is now the important problem. At an early stage of research, it was proved that the hydrodesulfurization (HDS) process is an excellent one because of its ability and low cost, and that the catalyst plays a very important role in the HDS process for residual oil. The catalyst must maintain its desulfurizaing activity even when large amounts of metals e.g., nickel and vanadium are deposited on its surface. Further, the catalyst must be so inexpensive that it can be discarded when it loses its activity. This and many other problems have been settled. A special start-up procedure was developed to prolong the activity of the catalyst. Results of the pilot-plant experiment are described by data and a flow diagram. The experiment was performed using a reactor with 2300 ml catalyst and included treating Kuwait 50% residual oil for periods of six and 12 months. The results were very satisfactory, but when residual oil other than that from Kuwait design modifications were necessary. The first full-scale plant was built in an oil refinery in Japan (Nippon Mining Co.). Process performance and versatility have been as good the pilot plant. Some data on the results are presented together with a flow sheet of the plant.

12137 APTIC NO. 29779

Hess, Klaus and Richard Stickel

GASIFICATION OF HYDROCARBONS. *(Zur Vergasung von Kohlenwasserstoffen). Text in German. Chem. Ing. Tech., 43(9):566-571, 1971. 5 refs.*

Nitrate formation can be prevented if combustion takes place at low air surplus and in a preliminary understoichiometric reaction at low temperatures. In principle combustion, followed by a thermal or catalytic afterburning represents a gasification process. The formation of soot limits the application of the gasification process. Gasification of hydrocarbons is illustrated with the aid of diagrams. The fractions of the various gasification components is determined by the dependence of the type of fuel and the temperature. The type of gasification agent, which can be either air or water vapor or a mixture of both, is used as a parameter. Through the introduction of Mollier s fuel characteristic, sigma, all hydrocarbons are integrated into the range of sigma equals one to two. The carbon receptivity of the gasification medium is an important boundary for all gasification processes. If the carbon receptivity is exceeded, soot develops.

12138 APTIC NO. 29685

Hirakawa, Hisaichi, Izumi Mizobuchi, and Toshiyuki Yamaie

DEVICE TO HOLD IN PLACE ATOMIZER NOZZLES OF A WASHER DEVICE FOR SULFUR OXIDE GAS CONTAINED IN COMBUSTION EXHAUST GAS FROM BOILER. *(Boira no nenshogasu chu no sanka iwo gasu senjosochi ni okeru funmu nozuru coshaku sochi). Text in Japanese. (Hirakawa Tekkosho K. K. (Japan)) Japan. Pat. Sho 45-33635, Oct. 29, 1970, 4p. (Appl. Aug. 27, 1965, claims not given).*

The atomizer nozzles for the sulfur oxide gas washing/reaction column can be easily installed at selected spots on the upper side of the column, using a device designed to facilitate the installation and allow more placement flexibility of the atomizers. The column is a part of the horizontal stack. Proper locations are selected on the top-side wall of the column and bored for installation of the atomizer nozzles. Box-like holders, one per each hole, are then fitted to the top-side wall of the column as if to cover the holes for atomizer nozzles. Each atomizer nozzle is connected to a pipe branched out from the main pipe connected to the alkaline water solution tank. To install the atomizer nozzles in the column, each nozzle unit is fitted in the hole bored in the top-side wall of the column and then held securely in place by means of a box-like holder in which the atomizer nozzle unit is held by a bolt screwed in from the top of the holder. This makes the installation much easier and permits easy relocation of the atomizer nozzles when necessary.

12139 APTIC NO. 30049

Hohne, Reinhard F.

PROCESS FOR REMOVING SULPHUR FROM GASES. *(Metallgesellschaft A. G., Frankfurt (West Germany)) Brit. Pat. 1,150,367. 5p., April 30, 1969. (Appl. Oct. 10, 1967, 9 claims).*

Present processes for the removal of sulfur from gases use a reaction of hydrogen sulfide with sulfur dioxide or air on activated carbon. However, they have difficulty regenerating the activated carbon. A variety of regeneration processes and extractions have many different problems. But these difficulties could be avoided by using a special activated carbon with a surface area of 1200 to 1500 sq m/gr which results in a steep adsorption isotherm, and by using a hot inert gas for regeneration. This invention provides a system for SO2 removal using this special activated carbon. The sulfur-retaining capacity of the activated carbon drops above 280 C, so the resulting desorbing gas has a relatively high concentration of sulfur. The inert desorbing gas is preferably nitrogen. The sulfur and nitrogen may be separated in a cyclone or scrubber, and the sulfur may be removed. The carbon can be used at temperatures up to 500 C, but should not be used below 300 C. A pilot plant is now in operation. Exhaust gas of 99% carbon dioxide and 1% H2S was passed through at a rate of 300 standard cu m/hr, and the gas was purified to 2-10 ppm of H2S and 300-500 ppm SO2. Then regeneration took place by passing nitrogen through activated carbon at 500 C. Methane or another non-reactive gas can be used instead of nitrogen. The design of the process is discussed with schematic drawings.

12140 APTIC NO. 29664

Homma, Katsunori and Shigeharu Koshi

COLLECTION EFFICIENCIES OF GLASS FIBER FILTERS FOR EACH SIZE OF LEAD AEROSOLS. *(Garasu sen iroshi no namari-ryushi ni taisuru ryudobetsu hoshuritsu). Text in Japanese. Taiki Osen Kenkyu (J. Japan Soc Air Pollution), 5(1):67, 1970. (Presented at the Japan Society of Air Pollution, Annual Meeting, 11th, Japan, 1970.)*

The collection efficiencies of glass fiber filters for the sizes 0.22 micron to 0.05 micron of lead were studied. Four leading brand filters were used for the test. Although minor differences in efficiency were observed between these 4 filters, they gave satisfactory results for aerosol sampling ranging 99.7% to 100%.

12141 APTIC NO. 29988

Honda, Hidemasa

METHOD FOR MANUFACTURING SPHERICAL ACTIVE CARBON FROM COAL. *(Sekitan o genryo tosuru kyukei kasseitan no seizoho nikansuru kenkyu). Text in Japanese. Kokuritsu Kenkyujo no Kenkyu Seika (Researches of Government Research Inst.), 1969:276, 280, Dec. 1969. 4 refs.*

The degree of grinding, size, composition, water content, and choice and amount of caking in a method for manufacturing active carbon from coal agent to be added was optimized. The mechanical conditions of the fretmill for kneading and the disc pelletizer were also studied to attain a 90-95% yield. Carbonization of the spherical carbon was performed in an oxygen-free atmosphere at 600-700 C. Inside and outside the heating rotary kilns, the chamber and fluidized furnaces were tested; the outside heating rotary kiln gave the most reliable performance. The activation of the spherical carbon by water vapor was optimized at 800-900 C and 3-10 kg of vapor per one kg of carbon. Normally 5-15 hr was required for activation. A kiln or fluidized activation furnace is being developed to shorten the processing time. The present method manufactures the spherical active carbon with 35-45% yield, allowing a drastic decrease in cost. A mercury porosimeter study, an analysis of the pore structure by the Kelvin method, and SO2 adsorbability of 110-140 g/l shown by the packed layer proved the catalyst capacity for desulfurization use. A favorable result was also obtained by a column test. The catalyst was also applicable for processing waste water. A series of tests are being planned to test the decoloration capability of the catalyst for dye waste water. The development of the present method to an industrial process is under way.

12142 APTIC NO. 29860

Hoshizawa, Kinji, Toru Sema, Kazuo Kotanida, and Ken Sonoda

EXPERIMENTAL RESEARCH ON LOW EXCESS AIR COMBUSTION IN BOILER BURNING HEAVY OIL ONLY. *(Juyu sensho boira no tei O2 nensho ni kansuru jikkenteki kenkyu). Text in Japanese. Preprint, 4p., 1970. 1 ref. (Presented at the Combustion Symposium, 8th, Osaka, Japan, Dec. 4-5, 1970, Paper 27.)*

Low excess air combustion was studied to examine what factors would affect the mixing of atomized fuel with combustion air and to determine the lowest limit for the low excess air combustion. A small-sized test furnace was designed to permit complete isolation of the primary combustion air from the secondary so that the flow ratio and the turning strength could be adjusted separately for each. It also permitted measurement of the oxygen density distribution as well as the temperature distribution in the combustion chamber. Dust density, flame temperature, and sulfur trioxide density were studied in relation to the synthesized strength of turning (both the primary and secondary airs combined). The state of combustion can be judged by the synthesized turning strength. This value is applicable to boilers in actual use. The synthesized turning strength is affected most by the turning angle of the secondary air; the angle should be narrow for effective combustion. The lowest limit for low excess air combustion can be judged by the O2 density at which generation of CO begins to take place during the combustion.

12143 APTIC NO. 29554

Hudson, A.

OBSERVATIONS ON THE ELIMINATION OF DUST. *(Observations concernant l elimination des poussieres). Text in French. Lab. Central ddes Services Chimiques de L Etat, Paris (France) and Inst. National de Securite pour la Prevention des Accidents du Travail et des Maladies Professionnelles, Paris (France), Colloq. Securite Sociale Serv. Prevent., 3rd, Paris, France, 1955, p. 71-73. (Nov. 3-5.)*

The dust particles in coal mines which are moved through the air by the ventilation originate from various sources and composed of a number of materials. The dust types differ from each other in toxicity. Calcium carbonate is considered inoffensive. Coal dust was thought harmless until it was found that persons exposed to it in strong concentrations for extended periods of time may contract pneumoconiosis. Stone dust with high silica content is known to be toxic and causes silicosis in persons who are exposed to it for a number of years. British coal mining regulations stipulate the following concentrations as admissible for normal working conditions: anthracite, 650 particles of size one to five microns per cu m of air; coal, 850 particles of one to five microns per cu cm of air; stone, 450 particles of 0.5 to five microns per cu cm. There can be an infinite variety in the mixture of dust particles originating from carbonic or non-carbonic materials. For the mining engineer, the simplest approach to the problem is to consider any dust as noxious and to try to eliminate it. The most effective and most widely used method of dust control is a water spray mist. Spraying is applied primarily in the front of the area being mixed, but is not effective when directed at the surface of the coal. Wet drilling and infusion of water into coal veins also contribute to the elimination of dust.

12144 APTIC NO. 29928

Inoue, Shiro and Masa Yoshimura

EQUALIZATION OF PARTICLE TRANSFER IN TRANSFERABLE STRATUM. *(Idosonai ryushi ido no kinitsuka). Text in Japanese. Preprint, Japan Society of Chemical Engineering, Tokyo, 3p., 1971. 6 refs. (Presented at the Japan Society of Chemical Engineering Convention, Annual, 36th, Tokyo, Japan, April 2-5, 1971, Paper E314.)*

A pilot plant for the desulfurization of waste gases containing sulfur dioxide that depends on activated carbon is described. For heat conductivity and dust disposal, a transferable stratum can be applied to the full-scale plant. Experimental results on the transfer of active carbon particles and a method of particle transfer equalization are shown. In the absorption tower of the pilot and full-scale plants, particles of activated carbon are contacted with the gas and with the steam in the separating tower. In the transfer equalization, particles should not be blocked, spaces should not exist among the particle strata, particle resistance should not be increased, and the structure should be simple. Particle transfer was examined with a 1/10 model of a transfer stratum as the minimum unit of the absorption tower in a full-scale plant. The exhaust was connected to the model at the bottom where the transfer velocity of the particles can be equalized by dividing the flow passage. In experiments with a two-dimensional model of the absorption tower, surprising results were obtained for multiple division of the passage. A transfer experiment using three-dimensional baffle plates showed equal transfer. The influence of the inner slit wall of the absorption tower is significant. For equal transfer, the 1/10 model can be scaled up suitable dimensions for a full-scale plant.

12145 APTIC NO. 30131

Ishibashi, Yasumasa and Masao Morita

STUDY ON DESULFURIZATION BY THE INJECTION OF LIMESTONE POWDER INTO FURNACE OF OIL FIRING BOILER (PART I). *Text in Japanese. Mitsubishi Juko Mitsubishi Heavy Ind., Tech. Rev.), 8(2):207-214, March 1971. 6 refs.*

The removal of sulfur dioxide from flue gas emitted by an oil-fired boiler by injecting alkaline earth additives such as limestone and magnesium hydroxide into the furnace was studied using a 125 MW boiler. Injection of the additives tended to raise steam and flue gas temperatures, however, the increases could be prevented by changing the injecting position.

Pressure loss of flue gas was increased by the deposit formed on the surface of the reheater tubes and the blockage of the clinker at the primary superheater tubes. These deposits can possibly be controlled by soot blowers or protectors for reheater tubes. The SO2 removal ratio was 18-25% when the amount of limestone injected was equivalent to that of sulfur in the fuel oil; it increased with an increase in the amount of additive. The low removal ratio is due to the short residence time of additive particles in the flue gas and the unreactivity of SO2 to the additive at temperatures above 700 C. As far as the tested boiler is concerned, a higher removal rate cannot be expected without addition of some oxidizing catalyst such as Fe204 or Vs05. (Author abstract modified)

12146 APTIC NO. 29479

Ishihara, Yoshimi and Hisashi Fukuzawa

STUDY ON MECHANISM OF REACTION WITH SULFUR DIOXIDE OF LIMESTONE POWDER BLOWN INTO COMBUSTION GAS. *(Nenshogasu chuni fukikomareta sekkaiseki funmatsu to nisanka iwo to no hannokiko no kasatsu). Text in Japanese. Preprint, Japan Chemical Society, Tokyo, 1p., 1971. (Presented at the Japan Chemical Society, Annual Meeting, 24th, Tokyo, March 1971, Paper 3413.)*

The low reaction rate is one of the defects of the limestone Blow-in Method in which fine limestone powder, slaked lime, or dolomite is blown into the boiler s fire furnace to react with sulfur dioxide for SO2 removal. The SO2 in the combustion gas of quick lime powder formed from limestond thermal cracking was used to examine the effects of various factors on the reaction velocity, the rate-determining process, and other necessary conditions for the higher rate of reaction. The reaction velocity increased proportionally with the increase in SO2 density. Also, the reaction velocity immediately following the start of the reaction was higher when limestone powder was smaller in grain size and blown into high temperature gas, but decreased more sharply as the reaction progressed. The slowdown of the reaction velocity with the reaction s progress was slower with Amami-produced limestone which was more porous than ordinary limestone, so that the reaction rate was twice as high as that obtained with ordinary limestone. The estimated speeds of SO2 diffusion and the estimated reaction velocity were used to examine the rate-determining process. With limestone powder of 50 micron or smaller grain size, the diffusion process in the combustion gas was not rate-determining. Since the speed of SO2 diffusion into limestone powder pores did not greatly differ from the reaction velocity, both were rate-determining. The volume expansion caused by the formation of calcium sulfate on the internal surface of limestone grain pores and the shrinkage (sintering) of grains caused by heat during the reaction were responsible for the gradual reduction in pore diameter. Therefore, both the chemical reaction velocity and the diffusion speed dropped at once and the reaction had no progress a second later. The rate of reaction was improved by porous limestone, pulverized finely and then blown into a high temperature zone of 1000-1200 C.

12147 APTIC NO. 29906

Jorissen, H. Dieter

ATTEMPT AT A THERMODYNAMIC SOLUTION: AUTOMOBILE EXHAUST GASES. *(Versuch einer thermodynamischen Loesung: Automobil abgase). Text in German. Umwelt (Duesseldorf), 1(1):39-41, 1971.*

At a symposium sponsored by General Motors, it became apparent what levels of automobile emissions can be expected for the years 1975 to 1980. Carbon monoxide emissions will be reduced to 5 g/mile, emissions of unburned hydrocarbons to 0.5 g/mile, and emissions of nitrogen oxides to 0.75 g/mile. Reduction of these three groups of pollutants means that combustion must take place on at a fuel/air ratio greater than one for low carbon monoxide emission, at a ratio of one for low hydrocarbon emission, and at a lack of air or at a large air surplus for low nitrogen oxides emissions. Usually the emission problem is met by installing afterburners. Since this does not solve the problem at its root, attempts should be made to prevent formation of such pollutants. As a thermodynamic solution, it is suggested that the engine be operated at high air surplus. The fuel is injected near the spark plugs. The fuel/air mixture becomes leaner toward the cylinder walls. Such layering is feasible with injection systems only. These are more expensive, however, than the carburetor engines. Other thermodynamic solutions are exhaust gas return for afterburning, multispark ignition, hot cooling, and influencing the engine processes through turbulences. Another possibility would be to change the fuel composition toward less polluting components. All methods still require intensive research.

12148 APTIC NO. 30070

Kanekawa, Akira

ON DOUBLE HEAD-CUT CONES TYPE CENTRIFUGAL DUST COLLECTOR. *(Niju tosetsu ensui gata enshin shujinki nitsuite). Text in Japanese. Preprint, Japan Society of Chemical Engineering, Tokyo, 3p., 1971. (Presented at the Japan Society of Chemical Engineering Convention, Annual, 36th, Tokyo, Japan, April 2-5, 1971, Paper E310.)*

Centrifugal dust collectors are divided according to the mechanism forming the centrifugal force field. In one type, gas is introduced tangentially and kept going by its own motion. In the second type, gas is mechanically rotated. With both types, the gas rotates along the inner wall of the outer cylinder at rest. This decreases the effect of the centrifugal force near the inner wall. In addition, it lowers the dust-collecting capacity of the inner wall used as the collecting plane. A double head-cut cones type collector, in which the outer cylinder for collecting dust turns at a high speed equal to the rotational velocity as the inner cylinder, is characterized by the correction of this fundamental defect and the capability of self-ventilation. The rotational part of this structure comprises an inner and an outer cylinder in the form of head-cut cones, turning shaft, and partition-plates which connect both cylinders and also divide the space between the cylinders in the direction of the rotational angle. The part at rest consists of a dust collection room, a mantle, an inlet duct, and an outlet duct. Dust-laden gas is led through the inlet to a space between the cylinders rotating at high speed. Under highspeed rotational motion, gas flows in the spread direction of the conelike cylinder due to the ventilation effect produced under centrifugal action, then is exhausted from an outlet duct. Dust is deposited on the inside of the outer cylinder by centrifugal force, and is moved in the spread direction of the cylinder by gas flow. Then dust, collected from the spread end of the outer cylinder, passes into the dust collecting room and is ejected through a dust outlet. The efficiency of this collector and particle diameter limits were calculated with a comparatively simple model of gas flow and particle motion.

12149 APTIC NO. 29987

Kato, Jun, Kazuo Shimada, Morio Suzuki, Hidetaka Ose, Tetsu Oshima, Yasunori Kuriki, and Toshiki Takematsu

REACTOR DEVICE FOR HEAVY OIL DESULFURIZATION. *(Juyu datsuryu hanno sochi). Text in Japanese. Preprint, Japan Industrial Technology Assoc., Tokyo, 11p., 1970. (Presented at the Japan Industrial Technology Association, Industrial Catalyst Seminar, Tokyo, Japan, Nov. 9, 1970.)*

An upward parallel flow type moving-floor reaction method (Tokoshi MDS Method) was tested which permits the replacement of catalyst pellets during the reaction process. The desulfurization efficiency remained constant when the hydrogen/oil ratio was 500 or higher. The effect of sulfur density on the reaction speed was studied. The reaction speed constant, k (1/hr kg/mol), calculated by the formula below, was constant for w/F. k equals F/w times x/Co(1-x) to the 2nd power where F is the quantity of heavy oil supplied (kg/hr); w, quantity of catalyst (kg); x, desulfurization efficiency (-), and Co, sulfur density in the material (mol/kg). The reaction speed constant was proportional to the reaction pressure when the pressure ranged from 50 kg/sq cm to 200 kg/sq cm. The reaction speed was proportional to the external surface area of the catalyst pellet when the pellet size was 1 mm or greater in diameter. While the speed became constant with a pellet size of less than 1 mm, the effective coefficient of the catalyst became equal to 1.0. Hydrogen consumption sharply increased at an 80% or higher desulfurization rate. The same trend was observed for the relationship between the desulfurization percentage and the formation of hydrogen carbides, C1 to C4, when the desulfurization percentage was 90% or higher. The relationship between the desulfurization percentage and the cracked oil yield was also studied. Also examined were the effects of liquid or gas flow speed or pellet size on the layer height of the catalyst, pressure drop, and holdup in a static base.

12150 APTIC NO. 29937

Katsuma, Kunio

METHOD TO MANUFACTURE CATALYST FOR CLEANING OF EXHAUST GAS FROM INTERNAL COMBUSTION ENGINES. *(Nainenkikan no hiagasu jokayo shokubai no seiho). Text in Japanese. (USUI Kokusai Sangyo K. K., Japan) Japan. Pat. Sho 46-2581. 6p., Jan. 22, 1971. (Appl. Aug. 12, 1966, claims not given).*

The conventional low-temperature catalyst used in an exhaust gas cleaner of an automobile is made of platinum, an expensive metal, easily contaminated with tetraethyl lead and the sulfur contained in the fuel. The newly invented low-temperature catalyst is made o vanadium, an inexpensive element, which gives higher cleaning performance. The new catalyst is of the V2O5-WO3-K2SO4 system. When used for cleaning exhaust gas consisting of carbon monoxide 3.0%, C3H3 1.5%, oxygen 80%, and nitrogen for the remainder, it gives the CO gas conversion rate of 60% at 150 C, 80% at 250 C, and 80% at 350 C. The corresponding rates were 0-10% at 150 C, 10-30% at 250 C, and 80% at 350 C with a conventional catalyst of the V2O5-d system. The conversion rate of C3H3 gas was 25% at 150 C, 50% at 250 C, and 55% at 350 C, against 0-5%, 0-10% and 50% with the conventional catalyst. In preparing the catalyst, the three component substances vanadium salt, potash salt, and tungstate, of which either the vanadium or potash salt should be an oxyacid salt of sulfur are mixed in given the ratios and dissolved in water. The water solution is heated for evaporation, condensation, and drying. The product obtained is oxidized and roasted at 600-800 C to produce the catalyst. Alternative methods of preparation are also described.

12151 APTIC NO. 29819

Kawashima, Shunkichi

ELECTRIC DUST COLLECTION DEVICE. *(Denki shujin sochi). Text in Japanese. (Hitachi Seisakusho K. K. (Japan)) Japan. Pat. Sho 46-2640. 3p. Jan. 22, 1971. 2 refs. (Appl. Sept. 16, 1966, 1 claim).*

The dust removal efficiency of an electric dust collector depends chiefly on the apparent specific resistance of the dust. An electric dust collection device was specially designed to remove dust from the exhaust gas of a boiler burning pulverized coal fuel. The dust in the exhaust gas gives a high specific resistance which should be lowered for an electric dust collector to remove dust efficiently. To lower the electrical resistance (to keep it within 0.0001 omega cm to 10 to the minus 11 omega cm), sulfur trioxide is injected into the exhaust gas. The dust collection efficiency increases with increase of the SO3 injection but reaches saturation at a certain point Therefore, it is desirable to keep the amount of SO3 injected to a necessary minimum. Part of the exhaust gas from the pulverized coal boiler is taken out by a by-pass; then sulfur dioxide contained in the exhaust gas is reduced to SO3 by means of oxidation catalyst made from compounds of iron oxide, platinum, and vanadium. The produced SO3 is fed into the exhaust gas in the electric dust collector to adjust the resistance value. In the new device, exhaust gas from the boiler goes through the exhaust duct into the air preheater, then it goes through another duct into the electric dust collector unit; and finally it is blown out into the chimney by a blower. A smaller duct pipe branches out from the first exhaust duct and is connected to a small cyclone, or similar dust collector, which is equipped with a built-in converter. Part of the exhaust gas taken into the by-pass dust collector is cleaned, and the SO2 is reduced to SO3 by the converter at the same time. The SO3 gas is then fed back into the main dust collector by a blower fan through another by-pass.

12152 APTIC NO. 30064

Khalafalla, Sanaa E., Edward F. Foerster, and Larry A. Haas

CATALYTIC REDUCTION OF SULFUR DIOXIDE ON IRON-ALUMINA BIFUNCTIONAL CATALYSTS. *Ind. Eng. Chem. Prod. Res. Develop., 10(2):133-137, 1971. 8 refs.*

Mixtures of alumina and iron powder provide efficient catalysts for the interaction of low concentrations of sulfur dioxide with carbon monoxide. The catalytic reaction rate at 500 C depend significantly on the iron content of the binary catalyst mixture. Mixtures containing 43% freshly reduced iron exhibit a sharp peak in the catalytic activity at 500 C when compared with other catalyst compositions. The normalized reaction rate per gram of iron, instead of per gram of total catalyst, still portrays a sharp maximum when plotted against the weight fraction of iron in the catalyst. This fact, in addition to nonsynergistic effects observed with iron-silica mixtures, disqualifies interpretations based solely on the anti-sintering or supportive action of alumina on iron. The results are best explained on the basis of a dual reaction site mechanism with both iron and alumina augmenting their specific sites activity at their interparticle contacts. (Author abstra.

12153 APTIC NO. 29080

Kikuchi, Minoru, Takashi Mitsumura, Kenji Seto, and Akira Kobuchi

BASIC RESEARCH ON SMOKE DESULFURIZATION BY LIME-METALS, 2ND REPORT - EFFECT OF METAL ADDITION ON CALCINATION OF LIME. *(Sekkai-kinzokukei ni yoru haien datsuryu no kisoteki kenkyu, Dai-niho-Sekkai no kasho ni oyobosu kinzoku no tenka koba). Text in Japanese. Preprint, Japan Chemical Society, Tokyo, 1p., 1971. (Presented at the Japan Chemical Society Annual Meeting, 24th, Tokyo, March 1971, Paper 3416.)*

The improved rate of reaction realized by adding zinc or another metal to lime in smoke desulfurization is due to the higher rate of lime calcination. The calcination reaction of calcium carbonate or a similar calcium compound mixed with zinc or another metal was studied primarily by means of DTA and X-ray diffraction to differentiate the reaction mechanism from the activation energy measured and also examine reaction temperature, time, and mixing ratio. Calcination rate of calcium carbonate increased with addition of iron, aluminum, and other metals. When zinc was added, the calcination rate increased by about 5% while the activation energy decreased by 5-10 Kcal/mole. No change either in air or in calcination rate occurred in nitrogen. Substances formed by the addition of zinc were observed by X-ray diffraction. One of the X-ray diffraction observations was made with 10% Zn addition, reaction temperature of 900 C in nitrogen gas atmosphere, and reaction time of 5 min. The pattern of the substances formed from the above experiment was the same as that obtained in air under the same conditions. According to the results, it is indicated that Zn was changed to ZnO. The calcination rate did not improve as much with the addition of ZnO as with Zn. Therefore, the addition of Zn is more effective in that the decomposition can be promoted by volume expansion and the stripping of oxygen from calcium carbonate taking place when Zn changes to ZnO.

12154 APTIC NO. 29478

Kikuchi, Minoru, Takashi Mitamura, Kenji Seto, and Akira Kobuchi

BASIC RESEARCH ON SMOKE DESULFURIZATION BY LIME-METALS, 1ST REPORT - DESULFURIZATION EFFECT BY ADDITION OF METAL. *(Sekkai-kinzokukei ni yoru haien datsuryu no kisoteki kenkyu, Dai-ippo - Kinzoku tenka ni yoru datsuryu koka). Text in Japanese. Preprint, Japan Chemical Society Tokyo, 1p., 1971. (Presented at the Japan Chemical Society, Annual Meeting, 24th, Tokyo, March 1971 Paper 3415.)*

Smoke desulfurization by lime is viewed as promising today but the lime utilization rate under the present blow-in method is only 30% or so. The effects of reaction temperature, time, and mixing ratio on the desulfurization were examined to find optimum conditions. Calcium compounds like calcium carbonate or calcium hydroxide were mixed with metal powders of zinc, copper, iron, or aluminum. The metal addition effected the desulfurization reaction as follows: mixed with Fe at 0.5 and 1.5 mixing ratio, the reaction rate (%) was 33 and 32 at 900 C and 39 and 35 at 1000 C; with Al, it was 28 and 29, 30 and 30; with Cu, 38 and 43, 45 and 54; and with Zn, 40 and 41, 86 and 90. When no metal was added, it was 29 at both 900 C and 1000 C. Therefore, the reaction rate improves best with Zn added to CaCO3. The highest reaction rate of 90% occurred at 1000 C with a Zn mixing ratio of 1.5. This was three times the reaction rate without metal. The desulfurization reaction by CaCO3 was CaCO3 yields calcium oxide + carbon dioxide; and CaO + sulfur dioxide + oxygen yields calcium sulfate. The rate of calcination increased by 5-15% at 800-900 C and by 5-30% at 1000 C when zinc was added. Therefore, the increased rate of calcination brought about the improved rate of the reaction. Higher desulfurization occurred when the second reaction was carried out after the first. However, the reaction rate rather decreased when the second reaction was performed with longer preheating. Accordingly, it may be possible to shorten the reaction time or improve the reaction rate with the addition of a preheating treatment to improve the utilization rate of lime.

12155 APTIC NO. 29768

Kimura, Kikuzi

EFFICIENCY OF FILTERS FOR RADIOACTIVE AEROSOL. *Text in Japanese. Rodo Kagaku (J. Sci. Labour, Tokyo), 42(10):696-702, Oct. 1966. 27 refs.*

Various kinds of dust filters were examined using a radioactive solid-aerosol of thoron daughters from thorium nitrate. Then electron microscopic photographs were taken of the thoron daughters corrected by a thermal precipitator. The relation between filtering efficiency and the number of sheets of filter paper showed that the particle diameter of the aerosol was very small and fairly uniform. Thoron and thoron daughters generated from thorium nitrate in a flask were led through a polyethylene tank to the dust filter to be tested. Several filters were tested for their filtering efficiency by measuring the radioactivity of the aerosol before and after filtration with a membrane filter. The filtering efficiency was low in most kinds of dust filters which usually showed high filtering efficiency for ordinary dust particles. This was probably caused by the small particle size of the radioactive aerosol. A glass fiber filter use in dust measurement and an asbestos, cellulose, glass fiber filter showed over 99% efficiency, even for radioactive aerosols.

12156 APTIC NO. 29439

Kobayakawa, Takashi

PURIFICATION DEVICE FOR AUTOMOTIVE EXHAUST GAS. *(Jidosha yo haiki joka sochi). Text in Japanese. (Assignee not given.) Japan. Pat. Sho 45-37491. 3p., Nov. 27, 1970. (Appl. July 27, 1967, claims not given).*

An after-burner using a rotary type matrix heat exchanger is described, designed to avoid overheating of the matrix by making a part of the exhaust gas by-pass the matrix when the engine is in high-speed operation. With an after-burner, employing a rotary matrix as its heat exchanger, designed for recombustion of such unburnt contents in the automotive exhaust gas as carbon monoxide, hydrocarbons, and nitrogen oxides, the temperature in the after burner reaches as high as 1300 C. This high temperature is detrimental to long-life performance of the matrix. The after- burner gives rise to the problem of overheating at the time of high load, high-output operation, especially when used in combination with a gasoline-fueled automobile engine. Nevertheless, the rotary type after-burner gives the best combustion efficiency under varyin operating conditions, ranging from idling and low-load operation to the high-speed operation normal automobile driving requires. Therefore, this invention has been devised to reduce the damage the overheating inflicts upon the matrix. The new purifier device, still employing a rotary matrix type after-burner, is so designed that the amount of exhaust gas going directly to the after-burner without going through the matrix may increase as the engine operation is shifted to high-load operation.

12157 APTIC NO. 29982

Korenberg, Ya. G., A. N. Ternovskaya, N. N. Loseva, and B. A. Dubovitsky

HIGH-CONCENTRATION SULFUR DIOXIDE FROM CALCINING PYRITES IN THE DKSM FURNACE.

(Polucheniye vysokokontsentrirovannogo sernistogo gaza pri obzhige kolchedana v pechi DKSM). Text in Russian. Khim. Prom. (Moscow), no. 2:119-122, 1971. 4 refs.

Some problems connected with increasing sulfur dioxide concentration by using oxygen instead of air in calcining pyrite are discussed; specifically, the DKSM furnace (a furnace with two boiling layers) is considered. The intensity of SO2 production in the furnace is not determined by oxygen concentration in blasted air, but by the possibility of locating a heat absorbing surface in the upper layer of the furnace. The mathematical expressions are derived enabling calculation of furnace diameter that guarantees minimum surface of upper layer necessary for placing a heat absorbing surface. The possibility of introducing gases containing SO2 into pre-chamber, i.e., of recycling part of roasting gases, is considered, which increases SO2 concentration in roasting gases. The equations are derived for calculating composition of roasting gases. The model calculation of basic characteristics of A DKSM furnace producing 200 tons/day of SO2 and working with recirculation of roasting gases is presented. At constant inflow of air and at decreasing amounts of recirculated gases, SO2 concentration in roasting gases increases negligibly at the exit from the furnace. At constant amount of recirculated gases and decreased air inflow, SO2 content increases more rapidly. With both kept constant, SO2 concentration is considerably higher with gas recirculation than when only air is blown in.

12158 APTIC NO. 29755

Kotera, Yoshihide and Masako Yamadaya

MANUFACTURING OF INDUSTRIAL CATALYST COMPRISING ALUMINA AS CARRIER.

(Arumina o tantai to shita kogyo shokubai no seizo). Text in Japanese. Preprint, Japan Industrial Technology Assoc., Tokyo, 12p., 1970. 5 refs. (Presented at the Industrial Catalyst Seminar Tokyo, Japan, Nov. 9, 1970.)

Alumina hydrate manufactured through two different ways, one by reaction between sodium aluminate water solution and carbon dioxide and the other by reaction between sodium aluminate water solution and aluminum sulfate water solution, was analyzed for properties including physical and chemical characteristics. The Crystal structure, shape, and size of the secondary grain of the Alumina hydrate obtained by reaction between sodium aluminate water solution and carbon dioxide all differ according to the sedimentation conditions. As to the alumina obtained by roasting the alumina hydrate, the size of its crystallite and that of a unit grain (50 A) are practically unaffected by the sedimentation conditions, although shape of its secondary grain depends on that of the original alumina hydrate. However, the porosity structure of the alumina has a relationship with the shape of the secondary grain formed by coagulation of the unit grains. The specific surface acidity value of the vacuum-dried alumina coincided with th basicity of that which had adsorbed steam, and this relationship between the two remained practically the same for all the samples tested. The alumina hydrate obtained by reaction between sodium aluminate water solution and alumina sulfate water solution gives different crystal structure and sulfate ion content percentage according to the sedimentation conditions. Crystal structure and unit grain-size distribution remain unchanged, but porosity structure drastically changes according to the sedimentation conditions. The additions of aluminum carbonate during the sedimentation process produces an effect to reduce sulfate ion of the alumina hydrate, prevent crystalline growth of by-alite and drastically increase pore volume of the alumina dehydrated at 500 C.

12159 APTIC NO. 29989

Kotera, Yoshihide, Jun Kato, Naoyuki Todo, and Toshio Ishikawa

STUDY ON THE DIRECT DESULFURIZATION OF HEAVY OIL.

(Juyu no chokusetsu datsuryu ni kansuru kenkyu). Text in Japanese. Kokuritsu Kenkyujo no Kenkyu Seika (Researches of Government Research Inst.), 1969:125, Dec. 1969.

A performance test for a catalyst for a fluidized bed was conducted under a pressure of 50-200 kg/sq cm, temperature of 380-420 C, and LHSV (?) 0.5-2.0. A continuous reactor of the fluidized-bed type with a reactor 100 mm in inner diameter and 2000 mm in height was used. The basic factors for apparatus design were studied by clarifying the mass balance of the total system, including the non-reactive gas. Also, tests for catalytic activity and reaction rate were conducted with an experimental set-up of the fluidized bed complete with a mixing continuous reactor. In an effort to optimize the manufacturing method of the desulfurization catalyst suitable for the fluidized bed, a cobalt or nickel-molybdenum base catalyst with an alumina carrier was used. In another test, the pressurized hydrodesulfurization in a 300 ml autoclave of the batch system was studied. The optimum conditions for catalytic activity was a reaction temperature of 400 C, an initial hydrogen pressure of 60 kg/sq cm, a heavy oil weight of 80 g, and a reaction time of 1 hr. The effects of the size of the catalyst granules and metal composition were also investigated by employing the catalyst G-35-B and its sulfide as a standard.

12160 APTIC NO. 29902

Kowalczyk, T.

SELECTION OF FILTRATION EQUIPMENT FOR SULPHUR AND POTASH PROCESSING.

Filtration Separation (Purley), 7(5):573-576, Sept.-Oct. 1970.

The processing of sulfur and potash is a key operation in the chemical industry. Enormous quantities of material are involved up to 10,000 t/24 hr, and operating conditions are difficult with the equipment exposed to severe corrosion, abrasion, and dust. These conditions impose severe duties on separating equipment. Furthermore, the equipment is required to separate products with varying granular compositions and different physical and chemical properties. Filters and centrifuges have large operating surfaces. Special designs and materials of construction are required. In the sulfur industry, horizontal batch centrifuges are used to dehydrate filtration concentrates and there is some tendency to replace them with vacuum filters. Melted concentrates are filtered on pressure horizontal plate type filters. Candle filters are also used. For potash processing, centrifuges are more frequently used, particularly for separating crystals and residues after ore dissolution, where traditionally vacuum drum and horizontal filters have been used. Flotation products of potassium salts are usually dehydrated on drum vacuum filters. Research is directed to the replacement of Dorr type settling tanks by thickeners, filters, and centrifuges. (Author abstract modified)

12161 APTIC NO. 29648

Kuronuma, Haruo, Kohei Urano, Hisao Imai, and Haisaku Kiyoura

METHOD TO REMOVE HARMFUL SUBSTANCES FROM STACK GAS BY-PRODUCING AMMONIUM SULFATE AND OTHERS (XV) - ACTIVATION ENERGY OF ACTIVATED CARDON FOR SO2 ADSORPTION. *(Ryuan to o fukusei suru endo haigasu no jokyoho (XV) - Kasseitan ni yoru SO2 kyuchaku no kasseika enerugi). Text in Japanese. Preprint, Japan Chemical Society, Tokyo, 1p., 1971. (Presented at the Japan Chemical Society, Annual Meeting, 24th, March 1971, Paper 3411.)*

Water, oxygen, and sulfur dioxide density effect the velocity of SO2 adsorption. The activation energy of SO2 adsorption by activated carbon was studied to further clarify the adsorption mechanism. A thermobalance was used to measure the adsorption velocity and the formula d(H2SO4)/dt equals dQt/dt equals k(SO2) times (O2) to the 2n power times (H2O) to the n power times (1-a) times Q infinity + k prime times (SO2) to the l prime power times (O2) to the m prime power times (H2O) where Q is the equilibrium (or pseudo-equilibrium) SO2 adsorption quantity per unit weight of the adsorbent in density C, and Qt is quantity of adsorption in lapse of t time. Generally, the second term in a equals Qt/Q less than 0.9 may be disregarded and the initial reaction velocity can be expressed as: dQt/dt equals k times (SO2) to the l power times (O2) to the n power times (H2O) to the n power times Q infinity equals k double prime times (SO2) to the l power times (O2) to the n power times (H2O) to the n power. A mixture gas of SO2, 0.2%, O2 2%, H2O 10% and nitrogen 87.8% was then prepared. Using the gas, several kinds of activated carbon were tested for the initial adsorption velocity by means of a thermobalance. The velocity constant k double prime was obtained from the test values. The apparent activation energy (Ea) was then obtained by means of an Arrhenius Plot. All gave practically equal negative values as expressed by Ea equals -3.8 4.5 times 10,000 cal/mol, indicating no significant difference attributable to different types of activated carbon. Therefore, the adsorption by activated carbon of SO2 is accompanied with an oxidation reaction; the apparent activation energy (Ea) can be expressed by activation energy (Eak) of the reaction during the rate-determining process, lambda 1, lambda 2, and lambda 3 representing adsorption heats of H20, SO2 and O2 respectively and reaction heat Q4.

12162 APTIC NO. 30095

Kuwata, Tsutomu, Yutaka Oguchi, and Koji Nomura

DISPOSAL OF HC FROM OIL CONTAINING RESIDUAL OIL AFTER DISTILLATION USING HYDROGEN. *(Joryu zanyu o fukumu sekiyukei tanka suiso no suiso shoriho). Text in Japanese. (Nippon Sekiyu Co. (Japan)) Japan. Pat. Sho 45-38146. 6p., Dec. 2, 1970. (Appl. May 1967, claims not given).*

A method for the disposal of hydrocarbons in oils containing residual oil from distillation by using hydrogen preceded by a pretreatment process is described. During the pretreatment stage, asphaltene and metals are eliminated to lower the catalytic activity Mineral material and 1-15 weight% hydrogel of alumina is added, mixed and molded, dried or dried and sintered. The mineral compounds include alumina, alumina hydrate, silica alumina, silica alumina hydrate, or material obtained from natural diatom earth, clays, bauxite, and laterite. The size cannot exceed 50 mesh. The mixture is best extruded and molded. The mineral compounds lower the hydrogen pressure in the reaction range and maintain the activity of the catalyst for a longer time. Pretreatment should preferably take place in such a way that the molded mixture can be replaced during operation. The pretreatment conditions are 200-500 C, pressure less than 300 kg/sq cm, and 0.2-10 vol/vol hr velocity. Depending upon the characteristics of the oil, the optimum combination of conditions should be selected. A little hydrogen is desirable to avoid deterioration of the oil. The treated oil is sent to the second stage of the reaction. Hydrogen gas is sometimes separated from the treated oil. Various reactions of hydrogenation refining aimed at the elimination of impurities or hydrogenation decomposition aimed at the manufacturing of light oil are applied. Catalysts used include molybdenum, cobalt, and nickel, carried by an alumina or a silica alumina carrier for desulfurization, denitrification, and deoxidization; for hydrogenation decomposition, catalysts of molybdenum, tungsten, nickel, and cobalt are used carried by acid carriers.

12163 APTIC NO. 29629

Lawrence, G. and J. Wisdom

EMISSION CONTROL BY EXHAUST MANIFOLD REACTOR–AN INITIAL STUDY FOR SMALL ENGINES. *Proc. Inst. Mech. Engrs. (London), 184(13): 249-267, 1969-70. 11 refs.*

The principle of using large volume insulated reactors in the exhaust stream together with injected air to provide oxygen has been known as an effective means of achieving very low emission levels for at least ten years. Since work in this area has been confined to engines mainly of the V.8 type with capacities in the 200-400 cu inch range, a study was undertaken to evaluate the viability of insulated thermal reactors on small engines from a functional viewpoint only. When tested in accordance with the Federal Test Procedure, emission levels of a 1 liter Vauxhall Viva were reduced to levels of approximately 50 ppm hydrocarbon, 1% carbon monoxide, and 375 ppm oxides of nitrogen by the use of an exhaust manifold reactor. Although vehicle maximum speed was reduced by approximately 5% and some slower acceleration rates were recorded, the vehicle fitted with the Mk III reactor design gave an overall fuel consumption some 11% better than that measured on the air injection reaction car. With both the Mk II and Mk III reactors, retarded ignition was required to maintain core temperature at idle and during the 15 mile/hr cruise condition. Throttle bypass mixture control is necessary to maintain low hydrocarbon levels on deceleration and temperature compensation is needed to stabilize idle carbon monoxide due to high under-the-hood temperatures. Fitting the Mk II reactor did not significantly alter the peak power output but did reduce engine torque between 1000 and 3000 rev/min by 6%. Reactor core temperatures between 800 and 1000 C are considered to be excessive for good endurance, and it is felt that a stainless steel unit would be suitable for a life of 50,000 miles provided that core temperatures could be held at 600-700 C. (Author conclusions modified)

12164 APTIC NO. 30055

Lee, G. K., F. D. Friedrich, and E. R. Mitchell

CONTROL OF POLLUTANT EMISSION AND SULPHURIC ACID CORROSION FROM COMBUSTION OF RESIDUAL FUEL OIL. PART I: LOW-PRESSURE HEATING BOILERS WITH MECHANICAL ATOMIZING BURNERS. *Dept of Energy, Mines, and Resources, Ottawa (Ontario), Canadian Combustion Research Lab., RR-195, 50p., Dec. 1968. 14 refs.*

The burning of residual fuel oil containing 2.5% sulfur was tested in a pilot boiler by using low excess combustion air to control combustion conditions and by neutralizing sulfur trioxide and sulfuric acid with a fuel additive. The effects of boiler load, excess combustion air, mean residence time, and a magnesia-alumina fuel oil additive were tested on the formation of noxious and corrosive combustion products. The additive was an effective substitute for low excess air in reducing nitrogen oxides and SO3 emissions. Also, the additive neutralized condensed H2S04 and improved the electrical resistivity of soot to the point where soot electrostatic precipitation became feasible. The mechanism of acid soot neutralization and soot constituents were studied by a detailed analyses of particulate matter samples taken from flames with untreated oil and oil treated with three different amounts of additive. When soot or particulate matter is present, standard methods for measuring SO3 concentrations can give misleading results. Hycrocarbons and aldehydes in flue gas were relatively low, and carcinogens in the soot were present in less than trace amounts. (Author abstract modified)

12165 APTIC NO. 29723

Lentz, Ervin C., Karl K. Kerns, and Robert N. Balluff

EXHAUST SYSTEM. *(Tenneco Inc., Houston, Tex.) U. S. Pat. 3,563,030 10p., Feb. 16, 1971. 7 refs. (Appl. Sept. 1, 1964, 5 claims).*

A device is described which will reduce the level of unburned emissions from an automobile internal combustion engine. Its purpose is to provide an emission reduction system that will exceed the requirements of the California air pollution control authorities, is safe under all operating conditions, and is commercially practical so that the components can be manufactured and sold at a reasonable price. The device consists of a system in which a catalytic reactor having no over-temperature controls is used in the engine exhaust system. Where necessary, there is also an emission control system associated with the engine to control the quantity of unburned hydrocarbons and carbon monoxide discharged into the exhaust system. A series of diagrams of the system is given along with an explanation of them.

12166 APTIC NO. 29658

Lessing, Lawrence

NEW WAYS TO MORE POWER WITH LESS POLLUTION. *Fortune, 82(5):78-81, 131, 132, 136, Nov. 1970.*

Three major new power developments have come into view over the past decade. One of these--called magnetohydrodynamics--is a method of generating electricity directly from a supersonic flow of hot ionized gases, while another development is a method of gathering solar power in space. Finally, there is the revolutionary development known as superconductivity, the carrying of electric current without resistance or loss. Basic principles of these three alternatives and the history of their development are reviewed. Electromagnets are basic to all power production. Potentially, superconducting magnets could markedly raise the efficiency of generators, transformers, and motors, while greatly reducing their bulk and cost.

12167 APTIC NO. 29718

Loosli, Clayton G., Mary Sue Hertweck, and Robert S. Hockwald

AIRBORNE INFLUENZA PR8-A VIRUS INFECTIONS IN ACTIVELY IMMUNIZED MICE. *Arch. Environ. Health, vol. 21:332-346, Sept. 1970. 42 refs.*

Young adult white mice, immunized subcutaneously with formalized mouse-lung suspensions of influenza PR8-A virus (test mice), along with corresponding unimmunized (control) mice, were exposed to sublethal and highly lethal nebulized clouds of freshly harvested homologous virus. The control mice developed rapid and fatal pulmonary infections following exposure to the lethal cloud of virus and extensive and persisting pulmonary changes following exposure to sublethal clouds of virus. The test mice became only mildly ill and survived the lethal airborne infections, although the virus grew to high titer in the lungs. Pneumonic involvement was focal and confined to the bronchial air passages and adjacent alveoli. Resolution occurred and residual lung scarring was not seen in recovered mice. Circulating antibody, therefore, was highly effective not only in preventing death but residual lung pathology. (Author abstract)

12168 APTIC NO. 29920

Lowes, Frederick J.

MUFFLER FOR REMOVING PARTICULATE LEAD FROM EXHAUST GASES OF INTERNAL COMBUSTION ENGINES. *(Dow Chemical Co., Midland, Mich.) U. S. Pat. 3,563,029. 5p., Feb. 16, 1971. 7 refs. (Appl. March 13, 1969, 8 claims).*

A muffler adapted to remove particulate lead matter from engine exhausts is described. It comprises a canister commonly used with internal combustion engines, having an inlet port for receiving exhaust gases from the engine and an outlet port for discharging them to the atmosphere. The bottom wall of the canister slopes upward to form a sump portion adapted to contain a flux which is liquid at the temperature range of the exhaust gas stream. Compartments are formed in the canister by a weir and one or more baffles. The exhaust gas flow provides a driving force which continuously splashes the liquid flux against the baffle surfaces and compartment walls. Thus, the surfaces are coated with a flux film which entraps the lead particulate matter in the gases. The flow of the gas-liquid body into adjacent compartments is controlled by a slotted edge on the weir. Sodium hydroxide, potassium hydroxide, oxygen aids of phosphorus, or acid salts of phosphorus are suggested for use as the flux. (Author abstract modified)

12169 APTIC NO. 29735

Maartmann, Sten

ELECTROSTATIC PRECIPITATORS FOR CEMENT AND LIME INDUSTRY. *(Elekticke odlucovace pro cementarsky a vapenicky prumysl). Text in Czech. Stavivo, 49(2):62-69, 1971. 10 refs.*

In an electrostatic precipitator, dust particles are extracted from gases by the forces in an electrostatic field. The basic equipment of such an installation includes a rectifier ahead of the precipitator. The latter consists of a chamber into which dust carrying gas enters at the lower part and leaves at the upper end. The chamber houses an emission electrode and a collecting electrode The accumulated dust is being removed by a mechanized knocking device and drops to the bottom, from where it is drawn off through an outlet. The efficiency of the precipitator varies with the type and size of dust. Larger particles can be separated more easily than smaller ones. Precipitation is mostly reduced at higher temperatures. While the initial cost of an electrostatic precipitator is rather high in comparison with other dust separatin devices, operating cost and maintenance expenses are low. Furthermore, standard designs of precipitators permit operation up to 400 C. They are suitable for all sizes of dust particles and can be dimensioned for any desired degree and volume of dedusting. Their utilization in the cement and lime industries is well established. As an example, the dust concentration in the exhaust air from a cement mill can be as high as 500 g/cu m; with a single electroprecipitator, it can be reduced to less than 50 g/cu m. The construction height of a modern precipitator may be as much as 14 metres.

12170 APTIC NO. 29115

MacDonald, Norval

ENVIRONMENTAL CONTROL AND THE INSURANCE SAFETY ENGINEER. *Environ. Safety Management, 141(4):11-13, April 1971.*

An insurance company's safety engineer is charged with the responsibility of advising management on control methods to prevent damage to public property and injuries to employees and the general public. Therefore, insurance safety engineers are directly involved in preventing air pollution from industrial processes. This involvement is illustrated by examples of services to a contractor, metal reclaiming industry, and a small refinery. To further increase the knowledge of the safety engineer in the field of pollution control, insurance companies should stress industrial hygiene activities and, together with safety societies, sponsor workshop seminars on control procedure.

12171 APTIC NO. 29561

Maisonneuve, J. De

MEASURES TAKEN BY THE REGIONAL SOCIAL SECURITY ADMINISTRATION OF LIMOGES TO REDUCE THE RISKS OF SILICOSIS. *(Mesures prises par la caisse regionale de Limoges pour reduire les risques de silicose). Text in French. Lab. Central des Services Chimiques de L Etat, Paris (France) and Inst. National de Securite pour la Prevention des Accidents du Travail et des Maladies Professionnelles, Paris (France), Colloq. Securite Sociale Serv. Prevent., 3rd, Paris, France, 1955, p. 93-96. (Nov. 3-5.)*

Industries and activities which involve the risk of occupational silicosis include breaking and shaping of stone blocks containing free silica; drilling of tunnels in territory rich in silica; factories for refractory materials; use of sand by industries such as foundries, or of sand materials containing free silica and used as abrasives, for instance for cleaning castings and forgings; and chinaware factories. Manufacturing shops for chinaware are strongly represented in the Limoges area in France where during the nine years prior to 1955 five times more cases of silicosis were reported from chinaware factories than from all other industries combined. Since then, by introducing proper ventilation and thorough floor cleaning, 80 to 90% of the dust content in the plant atmosphere is removed. In one particular case 2,000,000 dust particles per liter without ventilation were reduced to 300,000 particles with ventilation. Twenty percent of the 300,000 particles were free crystalline silica. Hard stone from quarries often contains high percentages of crystalline silica. Breaking and sawing such stones creates dangerous dust. Water sprays, directed at the sources of dust generation, are now a standard method of effective dust suppression in the stone industry. This method can also be applied in the refractory brick industry.

12172 APTIC NO. 29731

Matsumura, Masanobu, Toshio Miyake, Nobuyuki Imaishi, and Korehiko Mishimoto

ABSORPTION OF SULFUROUS ACID GAS BY WATER SOLUTION OF POTASSIUM PHOSPHATE. *(Rinsankari suiyoeki ni yoru aryusangasu no kyushu). Text in Japanese. Preprint, Japan Society of Chemical Engineering, Tokyo, 2p., 1970. 1 ref. (Presented at the Japan Society of Chemical Engineering, Autumn Conference, 4th, Hiroshima, Japan, Oct. 6-8, 1970, Paper A203.)*

A wet type of gas absorption method using a potassium phosphate water solution was investigated on a pilot plant scale. The abosrbent used in this process was a thick water solution of K4P2O7 and K2HPO4. It is assumed that the absorption of sulfur dioxide by this solution is achieved mostly through reactions of 2K2HPO4 plus SO2 plus H2O yields K2SO3 plus 2KH2PO4 and K2SO3 plus SO2 yields K2S2O5 and partially by the reaction, K2SO3 plus SO2 plus H2O yields 2KHSO3. The K2S2O5 formed by the reactions becomes separated into the solution as crystals, thus reducing the absorben to a slurry. When K2S2O5 is pyrolyzed, K2SO3 and SO2 will be obtained. The K2SO3 is then recirculated into the system for re-use. The abosrbent solution with an initial high viscosity decreases in pH densit, and viscosity as the operation proceeds. As the absorption progresses crystals are produced in the solution while foaming is seen in the absorbent solution tank. A possible drop in the absorption efficiency due to the formation of the crystals is not observed. The SO2 absorption efficiency was about 96% throughout this experiment.

12173 APTIC NO. 29732

Matsuyama, Takuzo and Noriaki Kido

ON REGENERATION OF ACTIVATED CARBON HAVING ADSORBED SO2. *(SO2 o kyuchakushita kasseitan no datchaku ni tsuite). Text in Japanese. Japan Society of Chemical Engineering, Tokyo, 2p., 1970. 3 refs. (Presented at the Japan Society of Chemical Engineering, Autumn Conference, 4th, Hiroshima, Japan, Oct. 6-8, 1970, Paper A207.)*

A new and more effective dry method to separate adsorbed sulfur dioxide from activated carbon and at the same time recover high density SO2 is by making use of the Joule heat produced when an electric current is applied. A removal or regeneration tube (36 mm in diameter and 500 mm long) was packed up to 340 mm high with activated carbon that had adsorbed SO2. One electrode plate was fitted to the top of the activated carbon packed in the tube and the other to the bottom. By applying an alternating current of 0-50 V to the electrodes, the voltage was adjusted to maintain a constant 14 A. The temperature of the activated carbon layer in the tube was measured at the center by means of a thermocouple. The temperature adjustment was made by adjusting the voltage. The exhaust gas was retained in the gas retainer bag and analyzed by gas chromatography and an absorption type gas analyzer. The rate of SO2 separation was measured by weight ratio. With no-load activated carbon, the temperature can reach 400 C in 5 min and 30 sec. With activated carbon of 0.3 g SO2/g activated carbon, it takes 8 min to reach 400 C. If there is some water present, the temperature remains steady around 100 C for some time, indicating heat consumption by evaporation of the water content. The temperature difference between the upper side and the lower is within only 10 C when 400 C is reached. The SO2 density of the exhaust gas is 70-90%. The SO2 density decreases with an increase of SO2 from 300 C and up. The SO2 density is lower than 15% at the most. The SO3/SO2 mole ratio is 0.0003-0.001 when the water content is 0.1 g H2O/g activated carbon but 0.002-0.004 when 0.15 g H2O/g activated carbon. The SO3/SO2 mole ratio corresponds to carbon dioxide density. The removal or separation efficiency is 95-100% at 350 C. The equilibrium adsorption quantity remains unchanged even after use for 10 cycles of adsorption and separation It is indicated that this method offers a simple, yet effective means of recovering high-density SO2. It further indicates that th method is applicable to the recovery and separation of a gas or solvent that was adsorbed by activated carbon.

12174 APTIC NO. 29792

Matsuzaki, Kazuo and Shusuke Kondo

STEAM-SMOKE MIST CONTACT DEVICE. *(Joki-enmutai sesshoku sochi). Text in Japanese. (Kyowa Koji K. K. (Japan)) Japan. Pat. Sho 45-40997. 3p., Dec. 22, 1970. (Appl. June 25, 1966, claims not given).*

A steam-smoke mist contact device was incorporated with a steam injection-type dust collector. The device is shaped like a venturi tube. The portion above the throat is the vortex chamber, which also serves as the induction section, immediately below the throat is the expansion chamber. Steam atomizer nozzles are installed on the inner wall of the vortex chamber. As smoke mist is fed into the vortex chamber, steam is jetted in through the atomizer nozzles so that the suspended particulates in the smoke are contacted with the steam to form water droplets around the particles. The smoke is subjected to turbulent notion and prolonged residence twice in the vortex chamber before discharge in order to enhance mixing and wetting with the steam.

12175 APTIC NO. 29605

Meyer, W. E.

TRANSPORTATION EMISSIONS. *Pennsylvania State Univ., University Park, Center for Air Environment Studies. Proceedings of the Annual Conference on Air Pollution Control Engineering Aspects, Allentown, Pa., 1971, p. 1-19. 4 refs. (Paper 202-71.)*

As things presently stand, the emissions from all means of transportation other than the automobile are minimal, and even their effects on the environment are negligible, except perhaps in specific locations, such as in the neighborhood of busy airports or railroad switchyards. Exhaust emissions per automobile before controls were 16.8 g/mi hydrocarbons, 125.0 g/mi carbon monoxide, and 4.0 g/mi oxides of nitrogen; the proposed standard for 1976 and the following years calls for 0.46 g/mi hydrocarbons, 4.7 g/mi carbon monoxide, and 0.4 g/mi oxides of nitrogen. All alternatives to the internal combustion engine are going to be significantly more expensive. Blowby and evaporation contribute only hydrocarbons to the atmosphere since no combustion is involved. When the fuel-air mixture is rich, not enough oxygen is available to permit all fuel molecules to oxidize completely, and carbon monoxide and hydrocarbons appear in the exhaust. With lean mixtures some of both will still be present because the mixture is not perfectly homogeneous and because combustion is inhibited when the flame reaches the comparatively cold combustion chamber walls. Various control methods and the problems associated with them are cited. Fuel injection, catalysts, water and alcohol injection, the elimination of lead in fuels, electric propulsion, Wankel engines, and other control methods are included.

12176 APTIC NO. 29796

Miller, R. L. and J. D. Winefordner

CALCULATION OF EXCESS AIR FOR COMBUSTION PROCESSES USING O2-TO-N2 RATIO. *Environ. Sci. Technol., 5(5):444-445, May 1971. 1 ref.*

For many incinerators, the percentage of air in excess of the air needed for complete combustion can be estimated simply by measuring the ratio of oxygen to nitrogen. When fuel composition is variable and incinerator temperature not excessively hot, this method is more reliable than the standard method of estimating excess air by measuring the percentage of carbon dioxide. Some general examples of calculations and results based on the O2-to-N2 ratio are given.

12177 APTIC NO. 29802

Mironov, A. M., I. P. Mukhlenov, and V. M. Pomerantsev

REMOVAL OF CHLORINE FROM GASES. *J. Appl. Chem. USSR (English translation from Russian of: Zh. Prikl. Khim.), 43(11):2556-2557, Nov. 1970. 5 refs.*

The catalytic conversion of gaseous chlorine to hydrogen chloride was studied using methane or propane as the reducing gas and the following catalysts: powdered brick, alumina gel, Fe2O3 on alumina gel, and Cr2O3 on alumina gel. The chlorine concentration of the gas was maintained at about 1%. Almost complete conversion of chlorine to hydrogen chloride was obtained at about 250 deg when propane was used in the presence of chromium oxide on alumina gel. The temperature of the gas entering the reactor need not be above 150 deg. It can be lowered substantially below this if the process is conducted in a fluidized catalyst bed. The catalytic process thus provides a radical solution to the problem of decontaminating waste gases from chemical and metallurgical industries, especially gases from magnesium production.

12178 APTIC NO. 29602

Miwa, Chikamitsu, Yoshinori Shoji, and Toru Kadowaki

PREVENTION OF AIR POLLUTION ON IRON FOUNDRY. *(Seitetsusho no taiki osen boshi). Text in Japanese. Kagaku Kogaku (Chem. Eng.), 35(1):42-47, Jan. 1971.*

The prevention of air pollution in iron-works was discussed. To control powder dust, use is made of iron-ore, limestone, and coal. The color of the dust must also be controlled. During steel and pig-iron production, corpuscles of oxidized iron are easily produced at high temperatures. Secondary dispersion for the treatment of dust should be considered for sites. The consideratio of dust storms is also required at seaside iron-works. Gas by products can be utilized as a source of heat. The sulfurous components from the sintering furnace and heavy oil must be considered. The selection and layout of arrangements must be examined because of the equipment producing smoke and soot. The technical level for the prevention of air pollution should be high because of a wide variety of equipment, the diversity of the powdered dust, and characteristics such as high temperatures, and continuous operation. Air-pollution from pig- and steel iron-works is powder dust and sulfurous anhydride. Dust control measures include the collection of dust and the suppression of powder dispersion from storage places of coal and ore. A wet-scattering collector was used to collect dust and large sprinklers were used t prevent powder dispersion. Sulfur dioxide is controlled by the desulfurization of the materials used in sintering and pellet making, of fuels, and of waste gases, and by installing higher stacks to improve smoke diffusion.

12179 APTIC NO. 29905

Morita, Seigo

EXHAUST GAS PURIFIER. *(Haikigasu seijoki). Text in Japanese. (Assignee not given.) Japan. Pat. Sho 45-37490. 3p., Nov. 27, 1970. (Appl. July 7, 1967, claims not given.)*

A filter-type gas purifier, in a sealed oblong case is filled with caustic soda grains and activated carbon. Each adsorbent is arranged to form alternating layers. The purifier has an intake pipe port which will be connected to the exhaust pipe of an automobile. It also has an exhaust pipe at the other end to discharge the purified exhaust gases. Several pairs of punched separators are vertically installed at proper intervals; each pair holds the caustic soda or activated carbon grains to form a filtering layer. Larger holes are perforated in half the area of each separator while the other half is provided with smaller holes. An alternating arrangement of the holes is necessary to make the exhaust gas zigzag through the filtering layers. Both the intake and exhaust chambers are divided into two compartments by a separator punched in a similar manner. The upper compartment of each chamber is filled with caustic soda or activated carbon. The exhaust gas taken into the intake chamber goes up through the separator into the upper compartment. The gas then moves in a horizontal direction into the activated carbon layer formed between the first pair of separators. The gas moves on through the vacant space between the first and second pairs of separators goes into the second caustic soda layer, then into the vacant space, the third layer and so on, until it is discharged from the exhaust chamber. As the gas goes through this process, carbon monoxide and other carbon compounds are adsorbed by the filtering layers.

12180 APTIC NO. 29954

Moritz, K. H., H. R. Savage, D. Traficante, and W. Weissman

ESSO/UNION FUEL OIL HYDRODESULFURIZATION PROCESSES. PART I: PROCESS APPLICATIONS AND DEVELOPMENT. *Preprint, Japan Petroleum Inst., Tokyo, p. 1-12, 1970. 2 refs. (Presented at the Symposium on Fuel Oil Desulfurization, Tokyo, Japan, March 10-11, 1970.)*

Basic process features, economics, and applications of two processes for the hydrodesulfurization of fuel oils are described. One, GO-fining, is designed for relatively complete desulfurization of vacuum gas oils, thermal and catalytic cycle oils and coker gas oils. The other process, RESIDfining, can desulfurize atmospheric residua and deasphalted oils to produce fuel oils of less than 1 wt% sulfur. The two processes are very similar in a number of essential features. They differ primarily in their severity of operation and their capability for sulfur reduction of the total fuel oil pool. Desulfurization of vacuum gas oils is relatively easy, but is limited in the amount of sulfur it can remove from the fuel oil pool. Desulfurization of the total residuum is much more difficult but is necessary in locations where total pool sulfur level must be lower than that attainable with GO-fining. Depending on the crude source, RESIDfining will be necessary to obtain pool sulfur levels below 1.5% 3 wt% sulfur.

12181 APTIC NO. 29962

Muehlberg, E.

WASTE GAS RECIRCULATION IN COMBUSTION ENGINES, PRIMARILY DIESEL ENGINES. *(Abgasrueckfuehrung bei Verbrennungskraftmaschinen, insbesondere bei Dieselmotoren). Text in German. Motortech. Z. (Stuttgart), 32(5):166-172, 1971. 20 refs.*

Experiments with a 135-hp, six-cylinder truck with diesel engine at low and medium loads and medium rpm of 1830 revealed that waste-gas recirculation reduced emissions of carbon monoxide, hydrocarbons, aldehydes, and nitrogen oxides. At zero load, the hydrocarbon emissions were reduced by 48%, the organic acids by 52% and the nitrogen oxides by 81%. At a medium pressure of 3.46 kg force/sq cm, which corresponds to almost medium load, the maximum emission reduction through waste-gas recirculation was 20% for hydrocarbons, 32% for organic acids, and 49% for nitrogen oxides. Comparison between hot and cold waste gas recirculation showed that the return of cooled waste gases reduced the nitrogen oxides emission still further at lamda 1.8. However, the carbon monoxide emission rose by 20% compared with operation without waste gas recirculation. The effect of waste gas recirculation on the emission of aldehydes (measured as formaldehyde) was also tested with a small two-cylinder tractor diesel engine. Without recirculation, 160 mg/hr formaldehyde were emitted with recirculation, the rate was 74 mg/hr or about 50% less.

12182 APTIC NO. 29728

Munakata, Ken, Yoshiteru Seki, and Yoshiyuki Yoshida

PERFORMANCE OF CYCLONE FOR LOW-PRESSURE AIR FLOW. *(Teiatsu kiryu n taisuru saikuron no seino). Text in Japanese. Preprint, Japan Society of Chemical Engineering, Tokyo, 2p. 1970. 2 refs. (Presented at the Japan Society of Chemical Engineering, Autumn Conference, 4th, Hiroshima, Japan, Oct. 6-8, 1970, Paper F113.)*

The range of air flow in which a cyclone is effective for dust collection was investigated. Three similar cyclones were used; the inlet and outlet ports were 53 mm and 40 mm for No. 1; 32 mm and 20 mm for No. 2; and 26 mm and 22 mm for No. 3. A 2B tube was used for the three cyclones. An intake tube tapering by 6 degrees inward and an exhaust tube tapering by 6 degrees outward were used to increase the flow velocity and the dust collection efficiency. To determine the dust collection efficiency, 10 g of powder per 1 m cu of air flow in the cyclone was fed in while the air flow was regulated to a fixed velocity before the powder was collected by the cyclone. The powder not collected by the cyclone was then collected by the filter. It seems variation in the dust collection efficiency is primarily caused by the Reynolds number. In the rang of the Reynolds number less than 500, a helical flow does not develop in a cyclone, so that a cyclone functions merely as an inertial dust collector. A considerably high dust collection efficiency in this range may be due to the phenomenon of slipping between the powder and the air current. In the range of the Reynolds number greater than 500, helical flow developes so that a cyclone can give the optimum performance it is designed for.

12183 APTIC NO. 29520

Murayama, Tadashi

AN EXPERIMENTAL STUDY ON THE PERFORMANCE OF A MULTIFUEL ENGINE. PART 3. AN ATTEMPT OF M-COMBUSTION APPLIED TO A SWIRL CHAMBER. *Bull. JSME (Japan Soc. Mech. Engrs.), 13(56):298-309, Feb. 1970. 10 refs.*

In the Meurer combustion system, the majority of the fuel is sprayed along the wall of the spherical combustion chamber encased in the piston in such a way as to cover the wall with a thin film, then the wall temperature is maintained at about 340 C by the aid of oil cooling applied to the inner surface of the piston. Fuel0 evaporates progressively from the wall and forms a uniform mixture without suffering thermal decomposition. Thus, a smaller quantity of fuel is required to initiate combustion, and a smoother operation is assured due to the low rate of pressure rise. M-combustion was applied to a swirl chamber to improve the multifuel capability of a diesel engine. The effects of M-combustion on the temperature of the swirl chamber wall are discussed, as well as dimensions of the fuel injection system, engine operating conditions, and the effects of gasoline characteristics on engine performance. (Author abstract modified)

12184 APTIC NO. 30093

Nakao, Yoshiaki, Masahiro Yamashita, Nobuyuki Sasaki, Kiyoharu Sakamoto, Tamotsu Ozaki, and Hiroyoshi Tanaka

STUDY ON THE STRENGTH OF SUPERHIGH ASSEMBLED MULTI-CYLINDER TYPE STACK. *Text in Japanese. Mitsubishi Juko Giho (Mitsubishi Heavy Ind. Tech. Rev.), 8(2):196-206, March 1971. 20 refs.*

Stacks are becoming higher and more complicated as air pollution from smoke increases. Since they are therefore more expensive, there is a strong demand for economical stacks. An assembled multi-cylinder stack is very economical, but it has many difficult technical problems, such as the evaluation of complicated stress distribution as shell structure, of natural vibrational modes as rigidly connected framed structure, and of its responses to earthquakes. These problems were studied by studying external force, which must be taken into consideration in its structural design, the simplification of the structure as a rigidly connected framed structure, and the methods of structural analysis for simplified models. An experiment proved that the methods could be applied to the calculation of displacement and stress distribution as a whole, but local stress distribution had to be calculated by regarding it as a local shell structure using the finite element method. Also, an ordinary method is described to analyze seismic responses. Calculated values approximately agreed with the mean values of experimentally obtained values. However, the scattering of responses against seismic motions, which is stochastic, was very large and was calculated by the probability theory on the asummption that seismic acceleration is ergodic process. Design stresses are also described.

12185 APTIC NO. 29870

Naritomi, Mitsuo and Seiji Fukuda

PERFORMANCE OF CHARCOAL-IMPREGNATED FILTER PAPER TYPE CP-20 FOR COLLECTING AIRBORNE RADIOIODINE. *(Hoshasei fuyu yoso ni taisuru kasseitan ganshin roshi no boshu tokusei). Text in Japanese. Nippon Genshiryoku Gakkaishi (J. At. Energy Soc. Japan), 13(4): 174-181, April 1971. 9 refs.*

Two types of charcoal-impregnated filter papers were tested for their collection performance on airborne iodine generated during production at an isotope test plant. Airborne iodine is successively filtered through traps in the cell and through two installed air cleaning systems. In order to observe the effect of charcoal granule size on the collection efficiency, the filter papers were impregnated with activated charcoal granules of about 2-micron and 70-micron average diameter. The dependence of collection efficiency on the nature of the airborne iodine, the relative humidity of the sampling air, the sampling period, and the face velocity are discussed. Generally, better performance for collection of airborne iodine was shown by the CP-20B filter paper compared with the CP-20A filter paper.

12186 APTIC NO. 29633

Newhall, H. K.

THE AUTOMOBILE AND AIR POLLUTION. *Wisconsin Eng., 74(2):18-20, Nov. 1969. 1 ref.*

Data are presented on 1966 U. S. emission rates of carbon monoxide, hydrocarbons, and nitrogen oxides. According to this data, automobiles contribute 91% of all CO, 60% of all hydrocarbons, and 46% othe nitrogen oxides. The basic problem of engine emissions control is indicated in plots of fuel-air equivalence ratio, which display the variation of each of the three important pollutants with varying fuel-air proportions. Achieving control of CO and hydrocarbons by operation of an engine with equivalence ratios less than unity would only maximize nitric oxide levels. For this reason, and because increased automobile production will require even stricter standards for CO and hydrocarbons, a major change in approach is indicated. In this context, the state of the art of external combustion engines, electric cars, and gas turbines is surveyed.

12187 APTIC NO. 29824

Norden, H.

MODERN OIL BURNING TECHNOLOGY AS DISPLAYED ON THE INTHERM IN STUTTGART AND THE 6.ISH IN FRANKFURT 1971. *(Moderne Oelbrenneteechnik nach dem Stand der Intherm in Stuttgart und der 6.ish in Frankfurt 1971). Text in German. Oel Gasfeuerung, 16(5):546-552, 1971.*

The capacity of heavy fuel oil burners has been increased to 9 t/hr, which allows large plants to be equipped with fewer burners. Continuous regulation can maintain soot-free combustion with the smallest air surplus. Because of increased air pollution concern, oil gasifiers, blue flame burners, combusters, and semi-combusters are gaining importance. Also, the familiar principle of water-in-oil emulsions for soot prevention has gained great interest; this functions when the water droplets in the fuel oil are smaller than the smallest atomized oil droplets. With the aid of thermally decomposed water in the flame, the air surplus can be reduced without soot formation, less sulfur trioxide develops, and the danger of low-temperature corrosion is reduced. Water-containing waste oils can be burned as emulsions if they contain more than 50% combustibles. If this is not the case, fuel oil or gas must be added. Burners which take two or three different types of fuels have come increasingly into use. Since natural gas is now preferred over the fuel oils, the natural gas prices will rise.

12188 APTIC NO. 29968

Norkina, L. A. and B. P. Volgin

RESISTANCE OF PHASES INVOLVED IN MASS TRANSFER DURING ABSORPTION OF A READILY SOLUBLE GAS IN A VENTURI SCRUBBER. *(O soprotivlenii faz massoperedaichi pri absorbtsii khorosho rastvorimogo gaza v skrubere Venturi). Text in Russian. Zh. Prikl. Khim., 44(1): 94-99, 1971. 16 refs.*

On the basis of experiments on absorption of ammonia in water and saturation of air by water vapor in a venturi absorber, the individual coefficients of mass transfer in gaseous and liquid phases were found, which varied in dependence on gas velocity (20 60 m/sec) as follows: for the gas phase, individual coefficient of mass transfer f sub g was 1.5 5.9 kmol/hr bar; for the liquid phase, k sub l times h (Henry constant) was 3.5 10.2 kmol/hr bar. These data were obtained with an absorber having an orifice diameter of 20 mm. The values presented are valid for NH3 concentrations higher than 3 5%

and for velocity of flow of liquid between 1 5 l/cu m. Absorption of readily soluble gases in a venturi scrubber is accompanied by considerable resistance of liquid phase, but the resistance is lower when compared with a film apparatus. This indicates high intensification of the fluid stage in a venturi scrubber because of the character of hydrodynamic conditions.

12189 APTIC NO. 29603

Oguchi, Yutaka and Junichi Kubo

HYDROGENIZATION DESULFURIZATION METHOD OF HEAVY HC. *(Jushitsu tanka suiso no suisoka datsuryuho). Text in Japanese. (Nippon Sekiyu Co. (Japan)) Japan. Pat. Sho 45-38145. 5p., Dec. 2, 1970. (Appl. May 1967, claims not given).*

The hydrodesulfurization of heavy hydrocarbon oil, the HC of the paraffin and naphthene group, alcohols, ethers, ketones or their mixtures with 1-18 carbons are added to the heavy HC oil at a rate of 1-30 wt%, at 200-500 C, and 30-300 atmospheres pressure. The heavy HC oil is a fraction which contains oil residuals. More advantageous desulfurization is achieved by adding the organic compounds, by restraining the heavy HC oil from breaking down, increasing the rate of desulfurization, and preventing a lowering o catalytic activity. The catalyst, oil, and hydrogen are contacted in the liquid phase at 200-500 C, and 30-300 atmospheres of pressure. At this time, the hydrogen is contacted with the oil and catalyst by dissolving into the oil. The reason why the additives improve the desulfurization effect is not quite clear. However, one of the important reasons is that the increase of the hydrogen concentration in liquid form restrains the decomposition of heavy HC oil, promotes desulfurization, and decreases the lowering of the catalytic activity. This effect is obtained when the pressure of hydrogen is increased in the traditional method. This method is applicable to any reaction type, fixed bed type, or movable bed type. The more the additives added, the faster the desulfurization takes place, since decomposition is restrained. Economically, the amount of additive should be 1-30 wt% of the heavy HC oil.

12190 APTIC NO. 29978

Okuno, Toshihide and Masahiko Tsuji

ON THE REACTIVITY OF AMINES WITH OZONE. *(Amin kagobutsu to ozon no hannosei nikansuru kenkyu). Text in Japanese. Hyogo Prefecture, Kobe (Japan), Environmental Science Inst., Rept. 2, p. 1-5, Feb. 1971. 3 refs.*

The unpleasant odor of most of aliphatic amines with basicity stronger than ammonia was removed by oxidation ozone. Because of its toxicity, ozone must be completely used in the reaction. The reaction rate constant (K) and activation energy (E) were measured for the gas-gas reaction of monomethyl, dimethyl, and trimethyl amines with ozone. Because of the high reaction rate, a flow system using a vinyl chloride tubular reaction apparatus at constant volume and temperature (20 C) was employed to reduce the contact time to as low as 0.25 sec. The reaction rate constant ranged from 0.161 times 100,000 to 3.340 times 100,000 l/mole, and the activation energy from 4.88 to 12.57 Kcal/mole. To determine the reaction order, a first-order reaction was first assumed and th basic equation integrated. The experimental data was inserted into the equation; the assumption failed to give the measured value for the reaction rate constant. By way of a similar procedure, the reaction was second order until 3.5 sec of the reaction time. Since the flow velocity in the exhaust ducts of factories is normally above 1 m/sec, duct length of over 4 m is required to realize the contact time over 4 sec. The reaction rate of ozone decomposition by vapor or heat needs further studies.

12191 APTIC NO. 29834

Pauli, B.

COMBUSTION PLANT FOR RUBBER-COATED EQUIPMENT, TANKS AND CABLES. *(Abbrennanlage fuer gummierte Apparate, Behaelter und Kabel). Text in German. Aufbereitungs-Technik, 12(5):264-266, 1971.*

The defective rubber lining of equipment used in the chemical industry is burned at low temperatures, since high temperatures would destroy the metallic components of the equipment. At this low-temperature, smoldering smoke and soot (25 to 30% by weight) develops. To avoid environmental pollution, smoke and soot are drawn off by an exhauster. Then the smoke and soot-laden air, which still contains a high amount of oxygen, is passed to a Saacke gas burner where it is burned. The combustion gases, having a temperature of 800 C or more, are cooled to 400 C with the addition of air. A blower then blows the gases out of a 25 m high stack.

12192 APTIC NO. 29506

Praliaud, Helene, Jacques Rousseau, and Michel-Vital Mathieu

COMPARISON OF THE CATALYTIC ACTIVITY OF MANGANESE DIOXIDE OF ELECTROLYTIC ORIGIN AND OF MANGANESE HYDROXIDE IN THE OXIDATION OF CARBON OXIDES. IV. ADSORPTION AND DESORPTION OF THE REAGENTS AND THE PRODUCTS OF THE REACTION ON MANGANESE HYDROXIDE. *(Comparaison des activites catalytiques d un bioxyde de manganese gamma d origine electrolytique et d un hydroxyoxyde de manganese dans l oxydation de l oxyde de carbone. IV. Adsorption et desorption des reactifs et du produit de la reaction sur l hydroxyoxyde de manganese). Text in French. J. Chim. Phys., 68(1):118-123, Jan. 1971. 8 refs.*

Manganese hydroxide is easily oxidized in manganese dioxide, liberating water formed on the surface. The adsorption of carbon monoxide is followed by a reaction which releases carbon dioxide and reduces the solid. During successive adsorptions of CO and oxygen, the oxidations and reductions are almost entirely reversible. Also, during the adsorption, oxides of the solid and CO2 formation occur simultaneously. The irreversible adsorption of CO2 takes place even at 130 C and involves a variation of the semiconductivity of the solid. Carbon dioxide is fixed on the surface hydroxide groups and manganese atoms. At 70 C, carbon trioxide ions are formed on the mobile oxygen ions resulting from the previous oxidation of MnOOH in MnO2.

12193 APTIC NO. 29852

Rautu, R.

ALKALI AND HEAT RECOVERY IN THE FLUE GASES FROM RECOVERY BOILERS. *(Posibilitatea recuperarii alcalilor si a caldurii din gasele reziduale de la cazanele de regenerare). Text in Rumanian. Celul. Hirtie (Bucharest), 19(10):368-373, Oct. 1970. 8 refs.*

The situation in sulfate pulp mills which do not use flue gas scrubbing is presented. Modern systems of alkali recovery in flue gases, based on the scrubber and venturi method, and gas washing in a foam layer, are discussed. Some calculations, subject to operating figures, are given with the view of designing a venturi scrubber. Some types of equipment and the gas scrubbing operation are presented based on bibliographic information. Systems of heat recovery in flue gases are also described. Some suggestions are given regarding the erection of a venturi scrubber or a washer with foam layer in sulfate pulp mills.

12194 APTIC NO. 29945

Riha, Karel

REMOVAL OF BROWN FUME FROM WASTE GASES OF OPEN HEARTH FURNACE OXYGEN STEELMAKING PROCESS. *(Prispevek k cisteni spalin martinskych peci od hnedeho dymu pri intenzifikaci kyslikem). Text in Czech. Hutnicke Listy (Prague), 26(3):165-170, 1971. 12 refs.*

Field trials were made on waste gas/dust collection and utilization in iron and steelworks. The dust clogs the off-take of the open-hearth furnace during the blowing of oxygen into the bath through roof lances. The dust can be collected, pelletized, and used directly as a refining agent in a steel plant.

12195 APTIC NO. 29996

Roberson, James E.

FACTORS TO CONSIDER IN SELECTING AIR POLLUTION CONTROL EQUIPMENT. *Paper Trade J., 155(23):40-42, June 7, 1971.*

Control equipment must be designed to satisfy air pollution control regulations; the very low emission concentrations require careful consideration of sampling methods. Control equipment must usually be specified according to designer estimates for factors such as gas flow rates, temperature, composition, density, and viscosity. Once the facility is in operation the values for these variables become evident and may differ from design values. Variations that can be specified for electrostatic precipitators, scrubbers, and mechanical collectors to provide additional flexibility in pollutant removal at a minimal cost are given. For particulate matter, electrostatic precipitators, bag filters, scrubbers, mechanical collectors, sonic collectors, and process changes are used for control. Adsorbers, scrubbers, catalytic oxidizers, thermal oxidizers, and chemical oxidizers are often applied for the removal of gaseous pollutants. Tall stacks are used to insure adequate dilution of pollutants. Capital costs for particulate control are given shown graphically.

12196 APTIC NO. 29931

Sadori, Hideo and Manabu Kurita

INVESTIGATION OF HEAVY OIL DESULFURIZATION IN FIXED-BED CONTACT REACTORS. *(Koteisho gata sesshoku hannoki ni okeru jushitsuyu datsuryu no kento). Text in Japanese. Preprint, Japan Society of Chemical Engineering, Japan, Tokyo, p. 133-137, 1970. 9 refs. (Presented at the Japan Society of Chemical Engineering, General Symposium, 9th, Nagoya, Japan, Nov. 25-26, 1970, Paper B-3-3.)*

Although research has been conducted on the hydrodesulfurization reaction of heavy oil, only some studies concerned the scale of the reactor. The desulfurizing percentage increases with superficial velocity in a column and total pressure, and decreases with catalyst particle size. The percentage of a flowing-up process is larger than that of a flowing-down process. A mathematical and experimental analysis is used by treating the flow problems in the reactor with the axial dispersion in the gas-liquid mixture phase flow. The hydrogen gas reacts with sulfur compounds contained in the oil in the catalyst layer and the reaction rate is in the second order of sulfur concentration (rate constant k sub O). The simultaneous differential equations obtained can be solved by Runge-Kutta s method. The operating hold-up is almost approximated by that in the case of no liquid flow. To estimate the axial dispersion coefficient Ez, pulse response tests were performed with an air-water (sodium chloride solution) system in which no reaction occurs. Outlet concentrations were expressed with Ez as a paramete and the Ez required was determined by comparing the response wave-forms and the concentration variations during the tests. The obtained Ez value was corrected by consideration of the effect of residence time on variance. Mixed flow hardly effected the mean residence time. The variances of concentration were plotted in a figure and an experimental equation for the variance was obtained. The reaction rate constant was proportional to the 0.23 power of operating hold-up and to the 0.3 power of dissolved hydrogen concentration in the oil. This explained some of the above mentioned effects on the desulfurizing percentage; the flow direction effect was explained by comparing the equations of operating hold-up.

12197 APTIC NO. 30030

Saito, Katsukazu and Toshihide Yamagishi

GAS ADSORPTION BY VOLCANIC ASH. *(Kazanbai no gasu kyuchaku). Text in Japanese. Hachinohe Kogyo Koto Senmon Gakko Kiyo (Res. Repts. Hachinohe Tech. Coll.), no. 5:62-65, May 1970. 6 refs.*

Volcanic ash, which represents an unused natural resource, was used for sulfur dioxide gas adsorption. The characteristic changes of gas adsorption were measured after acid and heat treatment of samples. The results were as follows: When acid concentrations were increased, Al203, Fe203, and calcium oxide were dissolved and silicon dioxide remained as silica gel. Therefore, specific surface area was increased and a large amount of SO2 gas was adsorbed. At high treatment temperatures, specific surface area of the volcanic ash decreased markedly so the amount of gas adsorbed decreased. Adsorption occurred rapidly at the beginning of contact and soon reached the saturation point. The equation of the adsorption rate followed Bangham s equation. (Author abstract modified)

12198 APTIC NO. 29972

Sakabe, Atsumu

STUDY ON THE DESULFURIZATION OF FLUE GAS BY THE USE OF DRY LIME. *(Kanshiki sekkaiho niyoru haien datsuryu nikansuru kenkyu). Text in Japanese. Kokuritsu Kenkyujo no Kenkyu Seika (Researches of Government Research Inst.), 1969:293, Dec. 1969. 1 ref.*

The effects of limestone baking and the reaction temperature on sulfur dioxide adsorption were studied by the use of bench scale fixed-bed test apparatus. The optimum baking temperature was 1000 C and the adsorption temperature was 900 C. Below 700 C, a rapid decrease in adsorption was observed. An experimental furnace for desulfurization was constructed. Limestone or slaked lime is blown into the combustion chamber at 800-1200 C. The lime powder adsorbed SO2 while being transported through the 9 m reaction tower by the combustion gas flowing at 3 m/sec. When the slaked lime was employed, the SO2 adsorption proceeded rapidly and leveled off 4.5 m from the inlet. The amount of SO2 adsorbed was dependent on the amount of slaked lime used and the partial pressures of SO2 and 02. The optimum temperature for the inlet gas was 1050 C. The rate of desulfurization was 32% with the use of slaked lime chemically equivalent to SO2 in the gas and 53% with twice as much as slaked lime, when the concentration of SO2 in the combustion gas was 0.2% and that of 02, 3%. The optimum gas temperature for limestone was also 1050

C. The rate of desulfurization was less than that for slaked lime, even with the smaller size granules. With the use of less than 200 mesh limestone chemically equivalent to SO_2, the rate of desulfurization was 20%. The rate was inversely proportional to the average size of the limestone granules or the precipitated calcium carbonate.

12199 APTIC NO. 29821

Sakuma, Hajime, Yoshikuni Yamada, and Shigeo Miura

POLLUTION CONTROL AT THE SAGAMIHARA PLANT OF OUR TOKYO MACHINERY WORKS. *Text in Japanese. (Mitsubishi Juko Giho (Mitsubishi Heavy Ind. Tech. Rev.), 8(2):358-365, March 1971.*

A new plant, devoted to the production of construction machinery, farm tractors, and Diesel engines, is discussed from the standpoint of air and water pollution control. Since the plant is located close to the Sagami River, the control regulation for waste water is very severe. Water treatment, noise reduction, smoke dissipation, dust and waste material burning, and the transition of underground water level are discussed. Waste water treatment is chiefly discussed. Smoke density was measured and compared to regulation density.

12200 APTIC NO. 29932

Sasaki, Suezo

CONTACT HYDRODESULFURIZATION OF PETROLEUM RESIDUAL OIL. *(Sekiyu zansayu no sesshoku suisokadatsuryuho). Text in Japanese. (Shinagawa Shrorenga K. K. (Japan)) Japan. Pat. Sho 46-1577. 4p., Jan. 14, 1971. (Appl. Aug. 8, 1967, claims not given).*

A contact hydrodesulfurization method is presented using a new catalyst manufactured from a colloidal earth such as Kashima Earth. The residual oil is made to contact with the catalyst under the co-presence of hydrogen gas or a gas containing 60% or more hydrogen. This new catalyst consumes less hydrogen, simultaneously removes nitrogen compounds with desulfurization and deposits less heavy metal, especially vanadium, on the surface of the catalyst. Therefore, definite economical advantages are obtained. The refined Kanuma Earth or similar colloidal earth is, while fed oxygen, heated to 150 C in the first one hour, to 400 C in the following 2.5 hours, and to 450 C in the final 30 minutes. A water solution of cobalt complex salt is then added drop by drop under pressure-reducing and heated conditions to the colloidal earth. The earth is gradually cooled and left for some time, and then dried at 110-140 C. It is calcinated at or about 550 C, then left in a water solution of ammonium molybdate salt, dried at 110-140 C, and calcinated at or about 550 C. The catalyst can be manufactured to contain oxides of cobalt and molybdenum or not to contain them. The catalyst was tested under the usual conditions for the desulfurization of residual oil giving a specific gravity of 0.9621 at 25 C/4 C, viscosity of 421.9 (Ost. (?), 50 C), sulfur of 4.10 wt%, V content of 74.3 ppm and nickel content of 22.5 ppm. Its efficiency of desulfurization was 82% after eight hours and 75% after 50 hours of use; it was 78% and 67% with a catalyst manufactured by an American firm. The rate of activity degradation (%/time) was 0.167 compared with 0.262 for the American counterpart The oil treated with the new catalyst gave 0.9120 for specific gravity (25 C/4 C), 58.2 for viscosity (Cst.(?), 50 C) and 1.025% for sulfur content; it was 0.9231, 75.3 and 1.35% with the American counterpart.

12201 APTIC NO. 29497

Sasaoka, Narimitsu, Yusaku Sakata, and Eiji Sasaoka

ADSORPTION OF SULFUR DIOXIDE GAS BY ACTIVATED CARBON OR MOLECULAR SIEVE. *(Kasseitan oyobi morekyurashibu niyoru aryusan gasukei no kyuchaku). Text in Japanese. Preprint, Japan Society of Chemical Engineering, Tokyo, p. 63-64, 1970. 4 refs. (Presented at the Japan Society of Chemical Engineering, Autumn Conference 4th, Hiroshima, Japan, Oct. 6-8, 1970, Paper B106.)*

The adsorption speed and mechanism of the sulfur dioxide and nitrogen gas system by the use of cylindrical or globular practical activated carbon and a molecular sieve (MS) were investigated for the improvement of a dry process for eliminating gaseous pollutants. The analytical model of adsorption comprises a shell model of a series of adsorption interface and a non-shell (whole area) model of parallel adsorption as the function of outer transportation, interface adsorption, and diffusion in an adsorption layer. The linearity of adsorption relationship between the model and the experiment is discussed. The activated carbon had a larger adsorption speed than the MS; however, it had a smaller adsorption power. Much smaller values were shown for volume comparison. The experiment was performed at a constant adsorption speed (30, 60, 90, and 120 C), a flow speed which was negligible to exterior resistance, and the contents of sulfur dioxide in the sample gas system was 0.83 2.5, and 4.17 mol%. The adsorption mechanism analysis showed that the activated carbon adsorbed in the non-shell model which assume that the adsorption speed is the product of inner adsorption, the power of gas concentration, and the difference of the adsorbed amount and the equilibrium adsorption. The MS adsorbed in the form of the shell adsorption which is dominant. Transportation of the outer substance was negligible and inner diffusion was dominent. The adsrobed amount was related to the sulfur dioxide gas partial pressure. The thermal effects of adsorption were small in the MS. The MS seems to be effective at high temperatures and low pressure compared to the activated carbon, but has a disadvantage with acids.

12202 APTIC NO. 29745

Sawatani, Tsugio

PROBLEM OF OBNOXIOUS ODOR IN INDUSTRIAL POLLUTIONS. *(Sangyo kogai ni okeru akushu mondai). Text in Japanese. Preprint, Association of Safety Engineering, Yokohama (Japan), 24p., 1970. (Presented at the Association of Safety Engineering Seminar, 17th, Yokohama, Japan, Feb. 1970.)*

Among the causes of obnoxious odors from industry are hydrocarbons, and mercaptan from oil refineries, mercaptan, from paper and pulp mills, and amines and fatty acids from rendering factories. Small local sources include plants which house and process animals (fisheries, pig sties, poultry houses), and garbage incineration plants. The kinds and intensity of odor are very vague, subjective, and difficult to classify. Weber-Fechner s law is explained, as well as fatigue from smelling, individual differences, and molar olfactory. Gas chromatography is generally used for measuring odors, although the gases which constitute the odors in the atmosphere must be condensed before they are analyzed. Other methods of measuring odor concentration include air dilution and saline water balance. Methods to eliminate odors are washing, cooling (condensation), adsorption (activated coal), air dilution, addition of such chemicals as acids, alkalis, chlorine, or ozone, and combustion (re-combustion, contact oxidization). Venturi scrubbers and towers are effective for trapping odors. Condensation is effective when odorous gases are at high temperatures and contain steam. Activated charcoal is expensive and if the charcoal is to be reused, the odor must again be eliminated. Air dilution requires a few hundreds or a few thousands times of air and at present is not feasible. Washing is successful if it can eliminate 90% of the odor. The use of acid or alkali instead of water is more effective. Waste liquid disposal again presents a problem and the facility itself is costly with high operating expenses. Recently, a mixture of acidic and basic powder was sprinkled on poultry droppings to eliminate odor. Ion-exchange is a combination of the acid-alkali and adsorption methods, but still is costly to maintain. Chlorine and ozone are not practical. Recombustion in a rotary drier would break down odor at 700 C. Contact combustion uses platinum catalytic wire net kept at 350 C, but the gas should not contain dust. If this condition is met, the method may have possibilities.

12203 APTIC NO. 29577

Schnell, Hermann

THE NEW PLANT FOR PRODUCTION OF SULFUR DIOXIDE AT LEVERKUSEN. *(Die neue Anlage zur Erzeugung von schwefliger saeure in Leverkusen). Text in German. Kaeltetechnik, 4(2):33-35, 1952. (Presented at the VDI - Fachausschusses fuer Waermeforschung Meeting, Konstanz, West Germany Oct. 17, 1950 and the Internationalen Kaeltekongress, London, England, 1951.)*

The new plant at Leverkusen produces 100% sulfur dioxide by removin SO2 from stack gas by liquefaction. The initial gas (cleaned and dried roasting gas with a temperature of 30 C, an SO2 content of about 6.5 to 7% by volume, and a water content of 0.1 to 0.2 g/cu m is compressed to 5.5 atm gauge and subsequently cooled with water. In a small heat exchanger, the gas is further cooled with liquid SO2 to -22 C. Next the gas is cooled to -39 C in a cooler lined with evaporating ammonia. The gas, which carries much less SO2 now, is further cooled to -62 to -64 C. Now the gas has 0.7% SO2 and is warmed to -40 C and then cooled again to -70 C three times. Afterwards, it passes through the counter current cooler and leaves the stack with a +10 C temperature.

12204 APTIC NO. 29740

Scholz, Hans-Ullrich

DEVELOPMENT OF GAS PURIFICATION INSTALLATIONS FOR ELECTRIC MELTING FURNACES. *(Die Entwicklung von Gasreinigungsanlagen fuer Elektrostahloefen). Text in German. Giessereitechnik, 17(1):11-14 1971. (Presented at the Technische Staubbekaempfung, Leipzig, East Germany, Oct. 9-10, 1969.)*

In the process of steel manufacture in an electric arc furnace, using the oxygen lance method of refining, a brown colored waste gas develops which contains a dust with iron oxide particles, most of which are well below 5 micron, down to 0.01 micron particle size A method and equipment for removal of the dust from these gases was developed in East Germany since 1958, using water sprays for purification. The waste gas exhaust piping is directly attached to the roof of the furnace, and leads to the purification station whic may serve two furnaces in turn. The gas, leaving the furnace at temperatures between 1100 and 1400 C, is cooled on its path through the long pipe line and by abundant addition of fresh air, down to 60 to 130 C. In a typical design, the purifier consists of vertically disposed large venturi pipes where the gas enters throug the top and passes downward through an intense water shower. The lower extensions of the venturi pipes reach into a water bath container through which the gas will pass, leaving behind the dust particles, and emerging into an exhaust funnel. The suction of the gas out of the furnace and its further circulation is affected by fans. The rate at which the gas leaves the furnace is automaticall controlled by a throttle device, to ensure that a constant underpressure of 0.5 to 1.0 mm water column is maintained in the furnace. The water bath of the purifier is arranged to permit pierodic sludge removal and addition of fresh water. A typical recently built purification installation, designed to take care of two 18 ton electric furnaces, is capable of purifying 40,000 cu m gas per hour.

12205 APTIC NO. 29957

Seidl, Walter

DESULFURIZATION OF WASTE GASES AND FUELS. *(Entschwefelung von Abgasen und Brennstoffen). Text in German. Brenstoff-Waerme- Kraft, 23(4):150-155, April 1971. 179 refs.*

Measures for reducing emissions of sulfur oxides comprise desulfurization of fuels or waste gases and changes in production processes. The literature on the desulfurization of coal is extensive but indicates no significant progress in the technology. Extraction of pyrite, the hydrating extraction of the Pittsburgh and Midway Coal Mining Co., desulfurization of semicoke, and liquefaction of coal are more broadly dealt with in the recent literature. Gulf Oil has developed a desulfurization process for oil which reduces the sulfur content to 1%. Great attention is directed toward desulfurization of waste gases. A 150.MW steam plant of the TVA is conducting large-scale desulfurization experiments that will last for 18 months. The Combustion Engineering Process (a wet limestone process) has also progressed to large-scale experiments, and 100-MW plant for large-scale experiments of the Cat-Ox process (Monsanto) under construction. Further development of the alkalized alumina process seems jeopardized by high abrasion losses of the catalyst. The Wellman-Lord process received a setback through the shut-down of the Crane station of the Baltimore Gas and Electric Company for economic reasons. A large-scale plant using the Chemico-Basic method is under construction in Everett, Mass.

12206 APTIC NO. 29939

Seki, Michihary, Kyoko Yamamoto, and Katsuhiro Kaneko

ADSORPTIVITY OF DESULFURIZING ACTIVATED CARBON FOR SULFUROUS ACID GAS (1). PERFORMANCE VARIATION OF ACTIVATED CARBON IN PILOT PLANT. *(Datsuryuyo kasseitan no aryusan gasu kyuchaku seino, sono 1. Jikken puranto ni okeru kasseitan no seino henka). Text in Japanese. Preprint, Japan Chemical Society, Tokyo, 1p., 1971. (Presented at the Japan Chemical Society, Annual Meeting, 24th, Tokyo, March 1971, Paper 3417.)*

The desulfurization of waste gases by activated carbon was tested in pilot plants handling 6000N cu m/hr and 150,000N cu m/hr of the gas to investigate the sulfur dioxide adsorptivity, the strength of the activated carbon, and factors which determine the life of the activated carbon. Activated carbon was contacted with a gas mixture of SO2 (2.0% vol), O2 (5.9%), H2O (10%), CO2 (12.7%), and N2 (the remainder) in % vol, at 100 C for h hours. The SO2 adsorbed by the activated carbon was heated in N2 gas at 450 C for separation and then absorbed by a 3% hydrogen peroxide solution for estimation. This wt % value represents the SO2 adsorptivity. Additionally, the SO2 density, adsorption temperature and adsorption time were varied to determine their effects on the SO2 adsorptivity of activated carbon. For the strength test, the JIS method was applied to granulated carbon and the microstrength method to crushed carbon. The activated carbon was tested in the pilot plants for a total of 4500 hours of adsorption in which the cycle of boiler gas adsorption for 48 hours and washing with water for 12 hours was repeated. A satisfactory rate of desulfurization was obtained. The findings show that the SO2 adsorption was 18.0 g per 100 g of activated carbon and 57.9 g per liter of activated carbon for the crushed-type carbon, and 17.2 g and 82.0 g for the granulated-type carbon when tested in the 6000N cu m/hr plant; 19.1 g and 95.9 g for a second granulated type and 20.7 g and 101.4 g for a third granulated type when tested in the 150,000N cu m/hr plant. The strengths were 64.4%, 87.3%, 78.8% and 94.1% respectively for the four types of activated carbon mentioned above. The crushed type became more powdered than the granulated during use. The adsorptivity (rate of desulfurization) was slightly affected by type of plant and maintained 85% with 4500 hours of use. The adsorptivity under different SO2 density, temperature, and adsorption time was evaluated; the results obtained are shown.

12207 APTIC NO. 29200

Semrau, Konrad T.

TWO NEW PROCESSES FOR RECOVERY OF SULPHUR OXIDES FROM SMELTER GASES.

Eng. Mining J., 172(4):115-119, April 1971. 10 refs.

The principal technical features and the economics of the Monsanto Cat-Ox and Wellman-Lord sulfur dioxide recovery processes are summarized. The Cat-Ox process converts SO2 directly to sulfuric acid, while the Wellman-Lord process concentrates the SO2 from the waste gas for subsequent conversion to sulfuric acid or for reduction to elemental sulfur. Both processes are best adapted for lean gases containing 2% or less SO2. The Wellman-Lord system employs a cyclic absorption-desorption process, with sodium sulfite solution as the absorbent. The Cat-Ox process is an adaptation of the familiar H2SO4 contact process, with some preheating via heat exchange with the catalytic converter exit gas. The rest of the required heat is supplied in an indirect gas-fired preheater. Overall costs of the Wellman-Lord system are lower than those of the Cat-Ox system at SO2 concentrations of less than 1.1% and higher at concentrations above that level. However, neither process will produce sulfur by-products at costs low enough to be competitive with the products from alternative available sources.

12208 APTIC NO. 29641

Semrau, Konrad T.

FEASIBILITY STUDY OF NEW SULFUR OXIDE CONTROL PROCESSES FOR APPLICATION TO SMELTERS AND POWER PLANTS. PART IV: THE WELLMAN- LORD SO2 RECOVERY PROCESS FOR APPLICATION TO POWER PLANT FLUE GASES. (FINAL REPORT).

Stanford Research Inst., Menlo Park, Calif., NAPCA Contract CPA 22-69-78, SRI Proj. PMU-7923, 70p., 1969 (?). 37 refs.

NTIS: PB 197028

The Wellman-Lord SO2 Recovery process is a cyclic absorption- desorption process for producing concentrated sulfur dioxide from waste gas streams, such as power plant flue gases and smelter offgases. The system uses a solution of sodium sulfite as the absorbent and is adaptable for use on gas streams containing SO2 at both low and relatively high concentrations. In the absorption cycle, the sulfite ion reacts with SO2 to form bisulfite. In the recovery cycle, the reaction is reversed by the application of heat which releases SO2 and regenerates the sulfite. The regeneration system appears capable of operating with a steam demand of about one-half to one-third that required in a conventional steam stripping system. In the absence of markets for concentrated SO2, it will in general be necessary to convert the SO2 to sulfuric acid in an auxiliary contact acid plant, or reduce it to elemental sulfur in an auxiliary reduction plant. Cost estimates are presented for application of the Wellman-Lord process to two hypothetical power plants, an existing 500-megawatt plant and a new 100-megawatt plant. Alternative contact sulfuric acid plants and SO2 reduction plants were added to each recovery plant. The estimates of capital and operating costs for the four control model are summarized in tabular form.

12209 APTIC NO. 30080

Shah, I. S.

SULFURIC ACID, SO2 DEVELOPMENTS: REMOVING SO2 AND ACID MIST WITH VENTURI SCRUBBERS.

Chem. Eng. Progr., 67(5):51-56, May 1971.

Unreacted sulfur dioxide, unabsorbed sulfur trioxide, and sulfuric acid mist are the main atmospheric pollutants from contact sulfuric acid plants. Absorber discharge stack gas can contain 1300-5400 ppm SO2 and from 1.0-50 mg/std cu ft acid mist. Acid mist concentrations from drum-type concentrators are from 50-200 mg/std cu ft of gas. A process for reducing outlet SO2 concentrations to 50-250 ppm is based on contacting flue gases in a venturi scrubber with a slurry consisting mainly of magnesium sulfite, magnesium sulfate, and magnesium oxide. Reaction for the SO2 absorption are given. The process also incorporates centrifuging, drying, and calcining operations leading to 99% recovery of sulfur. Test data are presented which illustrate that the venturi scrubber can attain a SO2 removal efficiency of 95%+ to 99%+, an SO3 removal efficiency of 70%, and reduce acid mist loadings to less than 5 mg/cu ft.

12210 APTIC NO. 29646

Shidara, Masao

COUNTERMEASURES ON PREVENTION OF INDUSTRIAL POLLUTIONS--PART II ON SULFURIC ACID GAS.

(Sangyo kogai boshi taisaku Dai 2 bu, Aryusan gasu taisaku). Text in Japanese. Kogyo Kanetsu (Ind. Heating), 7(6):42-53, Nov. 1970.

Industrial methods of desulfurization include wet type absorption (ammonia water method), oxidized manganese method dry type absorption, adsorption, activated charcoal method, and contact and oxidation method (vanadium catalysis method). Low sulfur heavy oil is explained. The major characteristics of crude oil produced, broken down by middle east, the southern region, North America, and the USSR are given. The refining of crude oil is explained. Anticipated methods of supplying light sulfur oil in 1973 are given. Methods of desulfurization of heavy oil described are: contact hydrogenation, adsorption by oxidized metals, a bio-chemical method using microbes, and a radio-chemical method. However, only the hydrogenation method is feasible both technically and industrially. The oil refineries program of desulfurization, their daily capacity, and the technology used are listed. A diagram of RCD Isomax is given. Desulfurization costs are listed both for direct and indirect desulfurization methods. Direct desulfurization method costs more, per 1 kl of raw material, but per 1% sulfur, it is cheaper, because of higher efficiency.

12211 APTIC NO. 29601

Shigeta, Yoshihiro

ODOR TREATMENT AND ITS COST AT RENDERING FACTORIES. *(Kaseijo no akushu shoriho to sono hiyo). Text in Japanese. PPM (Japan), 2(5):78-85, May 1971. 6 refs.*

At rendering factories, the raw material should be placed in a concrete pit, 2-3 m underground, with a V-shaped bottom. At the bottom, a screw conveyor is installed through which the raw materia is sent to the crusher. The pit can be equipped with a lid. Although a stone separator and metal detector can eliminate stone, gravel, and metal, such things as vinyl, cloth, and rope have to be eliminated by hand. Dead animals, animal bones, and large fish, ar put into the hasher before they are put in a cooker. These machine save labor, and the processes can be air tight. The continuous cooker is operated at 80-90 C for 10-20 minutes for fish offal. Animal bones and feathers are placed in a dry rendering plant. After cooking, a screw press removes 30-35% of the water from the fish offal and the fish cake is dried. The water is desludged. The animal bones and feathers are dried to decrease their water content to 6-10%. If an expeller is used for the fish offal to decrease the water content to 45-55%, the odor is decreased. The water removed from the offal should be utilized as fish soluble, as it contains 3-6% protein. The odor can be treated by combustion, activated coal, ozone, or oxidation catalyst methods, a neutralizer or masking method, or dilution. The cost of these methods is calculated.

12212 APTIC NO. 29944

Shih, Chien-Chou

THE EFFECT OF CATALYST POISONS ON THE ACTIVITY OF CARBON MONOXIDE SHIFT CATALYSTS. *Text in Chinese. Hua Hsueh (Chemistry), no. 1-2:14-19, June 1970. 6 refs.*

The effect of various poisons on the activity of catalysts was investigated by studying the catalytic conversion of carbon monoxide and producer gases mixed with various poisons on iron oxide catalysts. In the CO shift reaction, hydrogen sulfide, acetylene, propene, and propane showed different intensities of poisoning and particularly, H2S or C2H2 was stronger than C3H6 or C4H8. The poisoning effect varied with the kinds of catalysts, reaction temperatures, and the poison concentration. The poisoning of catalysts was temporary. Also, ferric oxide catalysts containing chromium trioxide, magnesium oxide, and aluminum oxide or CrO3 and MgO were effective in preventing the catalysts from H2S poisoning. The deactivation of the catalyst increased with decreasing reaction temperature and increasing H2S concentration in the gas. From the Arrhenius plot for the CO conversion on the Fe2O3 catalyst poisoned by H2S, it seemed that the active centers on the catalyst surface were uniformly poisoned.

12213 APTIC NO. 29930

Shimizu, Toshiaki, Akira Ota, and Tomoyuki Inami

TO PREVENT HEAVY OIL COMBUSTION GAS FROM PRODUCING BLACK SMOKE. *(Juyu nensho hiagasu no kokuen boshi ni tsuite). Text in Japanese. Netsu Kanri (Heat Management: Energy and Pollution Control), 23(3):6-11, March 1971.*

As a means to control black smoke emission from heavy oil combustion, a black smoke combustion furnace or secondary combustion furnace was designed. The furnace was tested in a medium-scale experiment in which it was found capable of burning more than 90% of the soot contained in the exhaust gas produced from the combustion of heavy oil fuels with an air/fuel ratio of 0.8-0.9. The experimental furnace, designed to control black smoke discharged from the primary combustion furnace of 0.48 cu m capacity equipped with a low-pressure, air-blast atomizer type burner burning grade B heavy oil with an air/fuel ratio of 0.8-1.0 and a burning quantity of fuel of 10-25 liter/hour, was 0.25 cu m in capacity and equipped with a similar type burner. The soot in the black smoke from the primary furnace was burned in the secondary furnace by blowing air in. The soot is usually difficult to burn when the temperature of the primary furnace is high. The ratio of air was about 1.25 for both furnaces combined. The construction of the secondary furnace, the method of taking in air and the mixing method are important. The checker should remain red hot during combustion. Air blown in has little effect on burning the soot unless the temperature of the secondary furnace is 700 C or higher. Auxiliary combustion in the secondary furnace is not required during normal operation, but is necessary when the temperature becomes too low. A practical version of secondary combustion furnace was designed and is now in operation and giving satisfactory performance. Principal design specifications are given.

12214 APTIC NO. 29324

Stenhouse, J. I. T. and J. A. Harrop

PARTICLE CAPTURE MECHANISMS IN FIBROUS FILTERS. *Filtration Separation (Purley), 8(2):169-172, March-April 1971. 20 refs. (Presented at the Filtration Symposium, London, England, March 18, 1970.)*

The effect of filter packing density in a filter consisting of monosized fibers, on the efficiency of particle capture in the inertial region and resistance to gas flow, is described theoretically. The simplest and most frequently applied model of the flow field close to a fiber in the filter mat is that due to Lamb. In this model, by incorporating the Oseen approximation, the Navier-Stokes equations are solved for the flow normal to a cylinder in an infinite medium. A disadvantage of the model is that the effect of neighboring fibers on the flow pattern is not taken into account. In 1956, a cellular model was published by Happel and Kuwabara to describe the flow pattern of a fluid through banks of parallel cylinders. Some of the theoretical work which has been done in applying the cellular model is described. The Kuwabara model has been applied to the study of the pressure drop through a filter, as well as to a theoretical description of the diffusional mechanism. The Happel and Kuwabara models have also been used to xescribe the mechanism of inertial interception.

12215 APTIC NO. 29720

Stockham, John

SULFUR DIOXIDE REMOVAL FROM STACK GASES. *Frontier, 30(1):11-19, Winter 1970.*

Legal restrictions on the sulfur content of fuels have spurred activity in fuel desulfurization and the use of naturally occurring low-sulfur coal. Removal of pyritic sulfur from coal by pulverization and deep cleaning is feasible, but will reduce the sulfur content to only about 2%. Coal gasification as a means of obtaining low-sulfur fuel may be feasible by 1980. Inasmuch as desulfurization of fuel is faced with unsolved problems, the alternative of removing sulfur oxides from stack gases has become more attractive. Sulfur dioxide, which is produced as the sulfur in the fuel burns, is chemically active and combines readily with alkaline materials. Wet and dry methods are cited. Sulfur dioxide can also be physically adsorbed on solids such as activated carbon. Two catalytic processes have been developed: one oxidizes the SO2 to sulfur trioxide, which is then converted to dilute sulfuric acid, and the other reduces the SO2 to elemental sulfur. Economics and options are mentioned.

12216 APTIC NO. 29701

Subramanyam, K. and M. R. A. Rao

ADSORPTION OF HYDROGEN AND CARBON MONOXIDE AND THEIR MIXTURES ON IRON FISCHER-TROPSCH CATALYSTS. PART I: SYNTHESIS EXPERIMENTS AND ADSORPTION STUDIES WITH HYDROGEN AND CARBON MONOXIDE ON PROMOTED AND UNPROMOTED IRON CATALYSTS. *J. Res. Inst. Catalysis, Hokkaido Univ., 18(3):115-123, Dec. 1970. 15 refs.*

In order to gain insight into the nature of the reactive substrate formed in Fischer-Tropsch synthesis and its relation to experimental parameters such as the influence of promotor, temperature, pressure and composition of the mixture of hydrogen and carbon monoxide used, investigations were carried out on the behavior of two iron catalysts, one of which had alkali as the promoter. In the synthesis with 1H2:1CO mixture, the catalyst with alkali (Fe 2) gave about 28 g/cu m of liquid and solid hydrocarbons whereas the catalyst without alkali (Fe 1) gave negligible amounts of the liquid products. In the adsorption from single gases, Fe 2 adsorbed about half the volume of the gas as compared with Fe 1. This is attributed to the coverage of nearly 70% of the iron surface in Fe 2 by alkali. (Author abstract)

12217 APTIC NO. 29486

Swift, P.

MODERN DUST CONTROL. *Brit. Chem. Equipment, 1970:43-44, Nov.*

Virtually all dust or particulate product control installations conform to a basic standard pattern, with four components, all of which must function properly if the plant is to achieve acceptable operational efficiencies. The hood serves to contain the dust generated at its source and prevent dispersion. Ducting must convey the entrained contaminated air to the selected point of treatment without material fall-out occurring in the system. The collector must function at an acceptable level of separation efficiency. The fan motor and drive must be capable of entraining the design air flow at the maximum resistance anticipated under normal plant operating conditions for extended periods with minimum required maintenance. Cyclones, wet washers, fabric filters, and electrostatic precipitators are the principal types of collector currently available. Advantages and disadvantages are indicated for the selection of a collector, as well as performance characteristics and operating variables.

12218 APTIC NO. 29933

Tabushi, Kiyoshi and Manabu Kurita

HYDRODESULFURIZATION OF HEAVY QUALITY OIL, RESIDUAL OIL, ETC.. (Jushitsuyu, zansayu to no suisokadatsuryuho). Text in Japanese. (Ishikawajima-Harima Heavy Industries (Japan)) Japan. Pat. Sho 46-819. 3p., Jan. 9, 1971. (Appl. Dec. 25, 1967, claims not given).

An ultrasonic wave is applied to the desulfurization of heavy quality oil, residual oil, or the like. The H-oil, UOP, Combining Gulf (HDS), and Isomax methods invariably feed the raw oil, as it is, into the reaction tower. Accordingly, the catalyst layer in the reaction tower becomes clogged with carbon, metal, and other solid impurities contained in the raw oil. The impurities, pitch, gummy substances, and larger carbons adhere to the surface of the catalyst and lower catalytic performance. Also, heavy metal compounds of vanadium and nickel are detrimental to the hydrodesulfurization reaction and lower the life of the catalyst. This invention offers a new heavy oil hydrodesulfurization method in which catalyst and supersonic wave processes are combined to prolong the life of the catalyst and, at the same time, improve desulfurization efficiency. During the heating of raw heavy oil to 350-430 C and pressurization to 1-150 atm., the oil is treated with hydrogen gas of the same pressure and with a catalyst to make the sulfur in the oil react with the hydrogen to form hydrogen sulfide. Then a supersonic wave is applied to the raw oil before the raw oil passes the catalyst layer. It decreases the oil viscosity because asphaltene or similar high-molecular compounds contained in the oil become dissociated and dispersed. The coke like carbon deposits on the surface of the catalyst are a product of the asphaltene pyrolized during the conventional hydrodesulfurization process. When treated with the supersonic wave, the raw oil yields very little of these deposits, so that the catalytic activity remains unaffected. The effect of the supersonic wave is higher when the raw oil is under higher temperature and pressure. Therefore, it is more effective to apply it at the reaction tower where temperature and pressure are high.

12219 APTIC NO. 30086

Taira, Toshio, Teizo Nogami, and Yoshihiro Sakai

ON A DUST-COLLECTING DEVICE FOR A FERROSILICON FURNACE. *(Fero sirikon ro no shujin sochi ni tsuite). Text in Japanese. Fuero Aroi (Ferro Alloy J.), 19(2):65-70, Dec. 1970.*

A firm manufacturing ferrosilicon has installed two bag filter dust collecting systems to arrest dusts discharged from its electric furnaces. Of the plant s five electric furnaces, two are 7500 kVA, two are 4500 kVA and one is 36,000 kVA. One dust collection system (No. one) was installed to take care of the first four furnaces (total of 24,000 kVA), the second system (No. two) for the last furnace. The total quantity of exhaust gas to be treated was estimated at 180,000 N cu m/hr for No. one and 260,000 for No. two. The dust content of the exhaust gas was estimated at 2.3 gr/N cu m while the temperature of the gas was 210 C for No. one and 200 C for No. two. The chemical composition of the dust was 90.3% silicon dioxide, 0.5% ferric oxide, 0.2% aluminum oxide, 0.4% calcium oxide, 1.0% manganese oxide, 3.0% sulfur dioxide and 1.7% carbon. Specifications for the respective dust collecting equipment are tabulated. The trial operation showed the following results for No. One. The suction wind volume was 175,000-185,000 N cu m/hr, the flow velocity in the duct was 14-16 m/sec, and the gas temperature was 210-250 C. With cold air at 70,000 N cu m/hr constantly taken in and mixed with the exhaust gas, the gas temperature at the entrance to the bag was 140-165 C. These results are approximately those specified. The emergency-alarm thermometer and shutoff valve provided at the point where the exhaust gas ducts from the four furnaces meet worked normally. By applying a Shake-off cycle to the bag, the pressure loss of the bag was reduced from 150-160 mmAq to 120-140 mmAq. The suction volume was 260,000-270,000 N cu m/hr and the gas temperature was 240-280 C in the No. two equipment. Gas temperature at the entrance to the bag was 230-270 C, indicating natural cooling of 10-20 C by the ducts and preduster. The bag is made of glass fiber and designed for normal use at 280 C, so no cooling system is required. The emergency safety devices that let out the gas and shut off the valve when signaled from the thermometer were found to function satisfactorily. A 50 min shake-off cycle was generally effective in reducing the pressure loss of the bag. The operating cost of the equipment was about $9.97 per ton of ferrosilicon.

12220 APTIC NO. 29911

Takei, Kazuo

EFFECTS OF WATER INJECTION IN INLET TUBE ON NO CONCENTRATION IN DIESEL EXHAUST. *(Jizeru kikan no NO haishutsu nodo nioyobosu kyukikannai mizu funsha no eikyo). Text in Japanese. Kenkyu Happyo Gaiyo (Abstr. Published Res.), 1971:4-5, April 15, 1971.*

Nitrogen oxides do not directly participate in combustion in the engine, but are formed when the nitrogen in the air is exposed to the high temperature and pressure in the cylinder. To reduce the nitrogen oxides from the exhaust, a high combustion temperature and oxygen concentration was avoided by water injection in the inlet, recycling the exhaust, or retarded fuel ejection. A 4-cycle engine with a precombustion chamber was used to clarify the effect of water injection on the nitric oxide concentration and other engine performance and exhaust components. The more water injected, the less the NO concentration. Smooth operation of the engine was not feasible for a water-to-fuel ratio beyond 100%. The NO concentration was reduced by 45% with an optimum water injection of 60%. The effect of water injection was significant at higher loads and rotation. The engine performance decreased with the amount of injected water: the average effective pressure decreased 3% and the exhaust temperature decreased by 10 C with 60% water injection. The exhaust smoke density increased 30% as indicated by the PHS smoke meter. A small increase in carbon monoxide and carbon dioxide concentrations and a small decrease in oxygen concentration was also seen.

12221 APTIC NO. 29533

Terao, Kunio

EXHAUST GAS CLEANER FOR DIESEL ENGINES. *(Dizeru kikan no haikijoka sochi). Text in Japanese. Nainen Kikan (Internal Combust. Eng.), 10(109):115-120, April, 1971. 4 refs.*

Diesel engine smoke consists primarily of porous carbon particulate of 0.1-10 micron size which are accompanied by sulfur dioxide and benzpyrene, a carcinogenic substance. The most dangerous to human health are carbon particulates ranging from 0.5 to 2.0 microns in grain size which are likely to be deposited in the lungs when inhaled. These particulates are too small for a filter to remove and too light for a centrifuge to separate. For an electric dust collector, the exhaust gas from a diesel engine is considerably moist and contains too much soot and dust. These particulates can be made larger for easier removal by means of a thermodynamic method developed from the nucleus formation theory. When the temperature of the gas saturated with steam is lowered to produce a state of supersaturation, the nucleus formation of water begins to take place; water drops are formed. This process was theoretically analyzed and evaluated for practical application using the formulas developed by J. P. Hirth, et al. for the probability of nucleus formation. The exhaust gas from the combustion chamber of a diesel engine goes through the water in the evaporator of the cleaner wher the water is evaporated with the heat of the gas. The exhaust gas now saturated with steam, flows through a cooling pipe and becomes supersaturated. In this state of supersaturation, water drops take dust particulates to form nuclei. The water drops are then arreste as the exhaust gas goes through the filter, and is cleaned. The liquefied water returns through a pipe into the evaporator. The cleaner can remove 95% or more of the soot and dust and sulfur dioxide is also almost completely removed. About 70% of the formaldehyde is removed; carbon monoxide and nitrogen oxides are partially removed; and bad odors are almost completely removed. The exhaust gas as well as noise is remarkably reduced. This device results in no loss in the power of the engine.

12222 APTIC NO. 29656

Teshirogi, Naohisa, Teiichi Ozaki, Yoshitada Uchiyama, and Nobuyuki Watanabe

AN EXPERIMENT ON VALVE RECESSION BY NON-LEADED GASOLINE. *(Muen gasorin niyoru barubu riseshon nitsuiteno ichi jikken). Text in Japanese. Kenkyu Happyo Gaiyo (Abstr. Published Res.), p. 5, April 15, 1971.*

Non-leaded gasoline, which lessens the public nuisance due to auto exhaust, has a problem of exhaust valve seat recession. Depending upon the engine design and operating condition, the seat wears abnormally and gives rise to an increase in pollutants and engine troubles. An air cooled two cylinder four cycle engine for light automobiles was studied. The exhaust valve was made of 21-4 N steel, and the seat from acicular cast iron. Non-leaded and regular gasoline were fed to each cylinder. At 50 hour intervals during the 130 hour operation, both cylinders were dismantled to check the exhaust valve and seat for abrasion, deposits, and a general pattern of wear. No valve recession was observed.

12223 APTIC NO. 29639

Theodore, Louis and James Pardini

DESIGN OF AN ELECTROSTATIC PRECIPITATOR USING MODELLING AND SIMULATION TECHNIQUES. *Proc. North Eastern Regional Antipollution Conf., Kingston, R. I., 1969. 7 refs. (July 22-25.)*

Six mathematical models are developed for three different flow regimes encountered in plate and tubular electrostatic precipitators. The flows considered are plug, laminar, and turbulent. In each case, the model is solved for the height of the precipitator necessary to ensure 100% collection efficiency. The calculated results from a digital simulation are compared with those obtained using standard design techniques. The results of the simulation can be used to evaluate the effects of new and/or different precipitator geometries, aerosol properties, and electrostatic conditions. This work may serve as guide to the proper design and selection of electrostatic precipitators.

12224 APTIC NO. 29977

Todo, Hisayuki, Kiyoshi Ogawa, Jo Kurita, Toshio Sato, Toshiaki Kabe, Kunihiro Muramatsu, Makoto Ogawa, Katsuhiko Wakabayashi, and Yoshio Orito

CATALYST FOR HEAVY OIL DESULFURIZATION. *(Juyu datsuryu shokobai). Text in Japanese. Preprint, Japan Industrial Technology Assoc., Tokyo, 8p., 1970. 6 refs. (Presented at the Japan Ind. Technology Association, Industrial Catalyst Seminar, Tokyo, Japan, Nov. 9, 1970.)*

A heavy oil desulfurization catalyst was obtained by a long-term research program. Thiophene desulfurizing activity of the metal oxide molybdenum oxide - aluminum oxide (MoO_3-Al_2O_3) catalyst was examined to determine whether the addition of metal to the basic catalyst would improve the desulfurization activity as when nickel or cobalt was added. Although, a few metals showed positive effects toward improvement when combined with Mo, none matched Co or Ni in improving the desulfurization efficiency of the Mo catalyst. Using two kinds of alumina, T and O, different catalyst were prepared. The MoO3 content was varied within 4-15 wt% while the CoO content was held at a fixed level in two different ways of preparation, the impregnation and the kneading method. The impregnated catalyst showed higher activity while the effect of preparation method differed greatly with the kind of carrier alumina. Then the porosity of the catalyst was also analyzed to examine its relationship to desulfurization efficiency. Only the pore radius has a proportionate relationship with the efficiency. Also, only the catalysts with pores of 50 A or larger radius were effective in the desulfurization of heavy oil (a Kafji oil in this case). But further analysis conducted to confirm this relationship indicated a negative result. A specific rate for MoO3 content of the catalyst and the rate giving the highest efficiency were found. When MoO3 is combined with, or liberated from, the carrier alumina in the catalyst, efficiency is not effected. The optimum Co/Mo ratio for the greatest efficiency was found. A deposit of vanadium and Ni in the catalyst was analyzed by EMX (X-ray microanalyzer); the V deposit was only in the surface layer of 200 micron; and the Ni deposit was observed in small quantity in the cores of the catalyst s particles.

12225 APTIC NO. 29531

Tomizuka, Kiyoshi

EMISSIONS FROM INTERNAL COMBUSTION ENGINE. *(Nainen kikan no haiki) Text in Japanese. Japan Society of Mechanical Engineering, Tokyo, Proc. Special Symp. Air Pollution, 27th, 1971, p. 43-53. 6 refs. (April.)*

Effective solutions to the problems of noxious gas emissions from the internal combustion engine can be found in the prewar technological achievements in the engineering aspects, some of them developed as early as the 1900s. Prior to the use of lead containing fuel that started only 40 years ago, the internal combustion engine operated successfully. It was recently argued that the de-leading of automotive fuel caused a serious problem of valve recession. The problem is reportedly solved by the use of a valve seat of heat-resistant steel. To check possible performance deterioration due to the octane value drop resulting from gasoline de-leading, one of the most effective solutions is removal of the hot spot from the combustion chamber of the engine. The sleeve valve system which was popular with automobiles up to 1925 and now forgotten by most auto engineers of today should be pointed out as the solution. Another possible solution is the use of mushroom shaped exhaust valves. It is also feasible to develop a non emission, non-pollution engine. The principle of this engine is very simple; oxygen and hydrogen are used as heat-generating compounds while an inert gas like argon is used as diluent. However, both oxygen and hydrogen are expensive at present and bulk for carrying, but they can be liquefied and carried in a vacuum bottle to save bulkiness. Several other suggestions to solve the emission problems were given.

12226 APTIC NO. 29468

Underwood, Arthur F.

REQUIEM FOR THE PISTON ENGINE? Machine Design, 42(19):20-22, 24-26, 31, 33-34, Aug. 6, 1970. 4 refs.

An Otto engine with no controls can emit up to 1000 ppm of contaminants in its exhaust. This is because the carbureted mixture is cooled when it contacts the cylinder walls and does not burn. Emissions data are presented for 1969 and 1970 Otto engines, diesel engines, stratified charge powerplants, the Stirling engine, gas turbines, and the steam engine. Advantages and disadvantages of the various powerplant systems are discussed. At the present time, the stratified charge engine is the leading candidate to replace the Otto engine. Because fuel is injected into the cylinder rather than the manifold, fuel dispersion and distribution can be closely controlled. As burning expands during downstroke, the fuel mixes with fresh air on the periphery of the cylinder resulting in leaning out of the mixture and completion of combustion at air-fuel ratios as high as 20 to 1.

12227 APTIC NO. 29725

Ussar, Max

TECHNOLOGY RENDERS ITS SERVICES TO AIR PURIFICATION AND NOISE SUPPRESSION AS PART OF ENVIRONMENTAL HYGIENE. *(Die Technik im Dienste der Luftreinhaltung und Laermminderung als Teil der Umwelthygiene). Text in German. Gas Wasser Waerme, 25(4):62-65, April 1971.*

In order to successfully combat air pollution caused by dust and gases, it is necessary to know the chemical and physical properties of these substances, and the concentrations in which they occur in the free atmosphere and at the source from which they originate. Devices for air sampling as well as for analysis of the dust and gases have been developed, but more standardization of methods would be desirable on a national and international basis. In air pollution by dust particles and gases, one differentiates between emission from sources, such as industrial plant, and emission which is the actual content of pollutants in the surrounding air, derived from all origins, such as dust from emissions and dust which is whirled up from the soil by moving air. Principal methods and equipment respectively for large scale dust removal are sedimentation, filtering, cyclones, high capacity washers of venturi type, and electrostatic separators. With regard to gases, the main industrial problem is the removal of troublesome and toxic gases such as sulfur dioxide, chlorine, fluorine, and nitric oxides which can be damaging to forestry and agriculture, and a health hazard to the human organism. One of the most applied methods in industries which generate waste gases containing any of the aforementioned gaseous pollutants is washing. In more recent years noise has become a very damaging occurrence in our environment. Future planning of residential buildings and industrial installations will have to take into account the need for acoustic insulation and noise suppression.

12228 APTIC NO. 29901

Utsumi, Hachiro, Eijiro Ando, Hosei Nomura, Tadao Kubota, and Mitsushige Tsuda

CONTROL OF EXHAUST GAS EMISSION OF MITSUBISHI COLT GALANT. *Text in Japanese. Mitsubishi Juko Giho (Mitsubishi Heavy Ind. Tech. Rev.), 8(2):154-269, March 1971. 10 refs.*

The control of vehicle emissions of a Mitsubishi Colt Galant was studied. The effects of the following engine variables on exhaust gas emission were investigated by the engine dynamometer test: air-fuel ratio, spark timing, manifold pressure, engine speed, compression ratio, coolant temperature, exhaust back pressure, and valve timing. The test vehicles were driven at seven modes cycle by the use of the dynamometer in accordance with the California test procedure, during which the single and combined effects of air-fuel ratio, spark timing, valve timing, idle carbon monoxide concentration, idle engine speed, and the throttle positioner on exhaust gas emission were investigated. As a result, an engine modification system incorporating such major elements as throttle positioner, intake air temperature regulator, modified ignition timing, and modified valve timing has been developed and adopted in the car, making it conform to the stringent 1971 California emission standard. A carbon storage system has been adopted for the control of evaporative emissions. The characteristics of activated carbon and the configuration factor which governs the carbon canister design are also described.

12229 APTIC NO. 30106

Vuorelainen, O.

AIR POLLUTION DERIVING FROM HEATING PLANTS AND INDUSTRIAL PROCESSES AND ITS CONTROL. *(Lammityksesta ja teollisuusprosesseista tulleet ilman saasteet ja niiden torjuminen). Text in Finnish. Kemian Teollisuus (Helsinki), no. 3:179-184, 1971.*

In 1970 a total of 4.35 million tons of heavy fuel oil (No. 4) and 3.25 million tons of light fuel oil (No. 1) were burned in Finland, representing 2.0-2.5% and 0.1-0.8%, respectively, of the world consumption of these fuels. This means that during one year, 200,000 tons of sulfur dioxide were released into the air. Various methods are discussed for combating pollution, including the use of cyclones, wet-process separators, filters, electrostatic separators, and high chimneys. The procurement of low-sulfur fuels and the desulfurization of fuels is also discussed.

12230 APTIC NO. 30083

Waggoner, Paul E.

PLANTS AND POLLUTED AIR. *BioScience, 21(10):455-459, May 15, 1971. 24 refs.*

Chemical protection of plants from ozone and air cleaning by foliage are discussed. Diffusion resistance of the under, not the upper, stomata is correlated with plant resistance to injury. For example, when stomata-closing phenylmercuric acetate is sprayed on the upper epidermis of tobacco, the leaf remains susceptible to ozone; but when the under stomata are closed by the same chemical, the leaf is protected. This resistance to ozone, and perhaps sulfur dioxide, also opposes the transpiration of water. Thus, it was possible to simulate and calculate the cleansing of polluted air by foliage. A comparison of the simulated cleansing with the change in ozone concentration between the air over Los Angeles and an area 75 km downwind indicated that the simulated cleansing caused a considerable part of the observed difference between the city and downwind values. This suggests that vegetation that survives pollution could have an important role in improving the environment.

12231 APTIC NO. 29578

Walkenhorst, Wilhelm and Guenter Zebel

A NEW FILTER FOR SUSPENDED MATTER WITH HIGH COLLECTION EFFICIENCY AND LOW FLOW RESISTANCE. *(Ueber ein neues Schwebstoffilter hoher Abscheideleistung und geringen Stroemungswiderstandes). Text in German. Staub (Duesseldorf), 24(11):444-448, Nov. 1964. 5 refs.*

A new filter makes use of the forces developed by polarization in a external electric field between the filter surface and the dust particles. The filter consists of individual layers of fabric whose number and spacing can be varied. It is particularly efficient for collecting fine dust particles, and its flow resistance is much lower than that of conventional filters of equal efficiency. The filter also enlarges more slowly as more dust is retained. Extremely fine aerosols, such as magnesium oxide and smoke are also retained with great efficiency. The filter is able to retain large quantities of dust, and if mineral dusts are retained, they can be removed by blowing.

12232 APTIC NO. 29838

Walker, Alan B.

PRINCIPLES OF COLLECTING PARTICULATES: DRY, WET OR ELECTROSTATICALLY. *Eng. Mining J., 172(4):83, April 1971.*

Four distinct basic types of particulate collector exist because no one type is universally applicable. To a great extent the problems that can be solved by simply adding a piece of control hardware and its auxiliaries to an existing process train are well in hand. The problems to which satisfactory solutions are still elusive, however, require analysis of the entire system that produces the pollution and evaluation of modifications which may involve changes in fuel or aspects of operating practice and/or changes in basic operating hardware, as well as possibly combining more than one type of hardware device. The absolute minimum of information required for preliminary screening in planning a system is: the volumetric flow rate of gases; gas temperature, pressure, and moisture content; particulate specific gravity and size distrubution; particulate form and concentration; the bulk electrical resistivity of solid particulates; the required particulate collection efficiency; any constraints that may exist with respect to availability, use, or disposal of water; the specifications of the fuel giving rise to the gas, if any, and/or the chemical composition of the gas.

12233 APTIC NO. 29492

Walling, John C.

POLLUTION CONTROL SYSTEMS FOR ASPHALT PLANTS. *Roads Streets, 114(5):114-118, May 1971.*

The rotary dryer for aggregates is the source of most dust emissions from hot-mix asphalt plants, and is the system component most likely to require control equipment. Other sources, such as the hot aggregate bucket elevator, the vibrating screens, the hot aggregate bins, the aggregate weigh hopper, and the mixer contribute a relatively minor amount of dust. Dust collectors for rotary dryers fall into four basic types: large diameter cyclones, high-efficiency multi-cyclones, wet scrubbers, and bag filters. Their advantages and economies, as well as deficiencies or disadvantages are reviewed. Bag filter cleaning and the principles of removing collected material from a filter medium are discussed. Filter maintenance is also mentioned.

12234 APTIC NO. 29974

Watanabe, Takashi, Kiyoshi Morikawa, and Etsuro Echigoya

METHOD TO MANUFACTURE CATALYST FOR DESULFURIZATION BY HYDROGEN ADDITION OF LIQUID HYDROCARBON. *(Ekijo tankasuiso no suisotenka datsuryu shokubai no seizohoho). Text in Japanese. (Kiyoshi Morikawa, Etsuro Echigoya, and Ishikawajima-Harima Heavy Industries (Japan)) Japan. Pat. Sho 46-352. 3p., Jan. 1971. (Appl. July 11, 1966, claims not given).*

Of the various methods developed to desulfurize high-sulfur crude oil and its products, the most successful may be the desulfurization by the addition of hydrogen. Under a reaction temperature of 300-500 C and a reaction pressure of 25-100 atmospheric pressure with a cobalt-molybdenum-alumina catalyst or a nickel-silica-alumina catalyst, this method gives a desulfurization rate of 50-80%. This invention develops a catalyst for the hydrodesulfurization of liquid hydrocarbons, which gives a desulfurization rate of 90% or higher at a reaction temperature of 300-500 C and a reaction pressure of 1-100 atmospheric pressure. Ammonia or similar nitrogen-containing base is added to a water solution of cobalt or nickel salt and molybdic acid salt. Sediments obtained from this solution are washed with water and heated for dehydration. This gives solid material of purple color (when cobalt salt was used) or yellowish green (when nickel salt was used). This cobalt molybdate or nickel molybdate is mixed with alumina gel, the former accounting for 15-20% and the latter for 85-80% in terms of weight percentage. Then water, amounting to 100-300 wt%, is added to this mixture. Ammonia, triethyl amine, or similar nitrogen-containing base is added to turn the whole mixture slightly basic. As the mixture is kneaded, the color changes from purple to pink (in case of cobalt molybdate) or from yellowish green to green (in case of nickel molybdate). After the complete change of color occurs, the mixture is dried at 100 C with wind and molded. It is then heat-treated at 450-600 C in the flowing air to obtain a blackish green compound of cobalt molybdenum-aluminum and oxygen or a brown compound of nickel- molybdenum-aluminum and oxygen. This compound is the new catalyst.

12235 APTIC NO. 29942

Watari, Shinjiro, Sanji Kadokura, Tsutom Kato, Hitohisa Kato, Mitsuo Kobayashi, and Etsuro Ishikawa

ACTIVATED CARBON INDUSTRY AND PROBLEMS IN FUTURE - SPHERICAL ACTIVATED CARBON FROM COAL. *(Kasseitan kogyo to kongo no mondai - Sekitan-kei kyukei kasseitan). Text in Japanese. Nenryo Kyokaishi (J. Fuel Soc. Japan, Tokyo), 50(528):219-229, April 1971.*

The total national output of activated carbon in Japan was 22,457 tons in 1969, indicating a 10% increase from the previous year. Powdered activated carbon accounted for 17,768 tons and the granular carbon for 4689 tons. With problems of air and water pollution becoming more urgent, demands for activated carbon are expected to increase. It can be used to remove sulfur dioxide from stack gases and clean waste water. The domesticly-produced activated carbon supply is manufactured mostly from charcoal, coconut husk charcoal, or similar wooden materials which are comparatively scarce and therefore expensive. The activated carbon industry is therefore studying coal as a new source. The National Research Institute for Pollutionnd Resources has undertaken research programs for the development of techniques and processes t manufacture activated carbon from coal; their new process for the production of spherical activated carbon from coal and the characteristics of the new activated carbon are discussed. The new process consists of mixer, kneader, pelletizer, classifier, modifying furnace combined with combustion furnace, carbonization furnace, activation furnace, cleaner, and drier. Pulverized bituminous coal is mixed with water and a caking agent in the mixer. After being well kneaded, it is formed into small balls by a disc pelletizer at room temperature. Activated carbon for gas phase material should come in pellets 5-10 mm in diameter and for liquid-phase material in 1-2 mm pellets; both types should be as spherical as possible. A new pelletizing method pelletizes the pulverized coal at 350-400 C so that the self-caking power of the coal may be utilized to eliminate the caking agent. The modifying process takes place at 300 C with a hot wind containing about 10% oxygen to give surface oxidation and heat curing in order to remove surface viscosity and provide necessary strength. The activated carbon is heat-treated at 500-800 C in the carbonization to remove gas and tar content detrimental to the activation and make it porous. The performance characteristics of the new activated carbon have been tested by using it in industrial facilities. The results of the tests are shown in detail. The spherical activated carbon gave better performance than the conventional type.

12236 APTIC NO. 30006

Webb, Byron K. and Henry D. Bowen

ELECTROSTATIC FIELD BREAKDOWN PHENOMENA IN APPLYING CHARGED PARTICLES. *Trans. ASAE (Am. Soc. Agr. Engrs.), 13(4):455-458, 461, July-Aug. 1970. 14 refs. (Presented at the American Society of Agricultural Engineers, Annual Meeting, Logan, Utah, June 1968, Paper 68-151.)*

Electric field intensity near the deposition surface was shown to be the dominant factor influencing the precipitation of charged dust particles on electrically grounded targets. Deposits on both metal targets and plant surfaces increased with electric charge density and electric field intensity until some optimum electric field intensity was obtained next to the target. For a given space charge density, the electric field intensity next to the target surface was dependent both on the shape of the target and its nearness to other grounded surfaces. Rounded objects and closely spaced objects tolerated higher space-charge levels before electric field breakdown occurred than objects with sharp edges and points and objects that were separated several inches from other grounded objects and surfaces. The higher levels of atmospheric relative humidity lowered the dust resistivity and raised the charge level. Two general methods are discussed for reducing the electric field breakdown and increasing deposition efficiency: the reduction of the electric field intensity where it is excessive and the use of a high-resistivity dust. Electric field intensities are effectively reduced by sandwiching the charged dust stream between an electrically grounded screen and the top of the plants, and by lowering the general charge level of the dust stream. (Author summary modified)

12237 APTIC NO. 29535

Yamamoto

CO BOILER OF FLUIDIZED BED TYPE CATALYTIC CRACKING PROCESS PRODUCIN NO LEAD GASOLINE. *(Muen gasorin seizoyo FCC sochi no CO boira). Text in Japanese. Mitsubishi Juko Giho, (Mitsubishi Heavy Ind. Tech. Rev.), 8(27):371-372, March 1971.*

A carbon monoxide boiler was designed to recover or utilize the hea energy (sensible heat as well as combustion heat of CO) of the CO gas discharged in large quantities from the fluidized bed type catalytic cracking process designed for the production of no-lead gasoline, thereby bringing about fuel economy and preventing air pollution at the same time. The steam produced by the CO boiler can be used to operate the steam turbine power generator and the steam turbine to drive important auxiliary devices for the fluidized catalytic cracking process. It employs a tangential firing system which makes it possible to burn a poor fuel like CO gas in a boiler exactly shaped like a heavy oil burning boiler and with naked water pipe construction. It requires no repair of the fire-proof material and assures stable, continuous operation. The tangential burner permits the combustion of CO gas and the exclusiv combustion of heavy oil or petroleum gas. The CO gas induction device consists of a main seal tank and a bypass tank located befor the boiler unit. It also permits the discharge of CO gas directly through the stack or chimney during start-up or in an emergency. The seal tanks are constructed and made of sturdy material so as to withstand severe operating conditions in which the high-temperature CO gas is contacted with water. The boiler is equipped with a fuel economizer and an air pre-heater to give a high rate of heat recovery and maintain high boiler efficiency. Safety devices are incorporated to prevent gas lead and other hazards. The control system maintains the flow of steam at a constant level.

12238 APTIC NO. 29788

Yamamoto, Kyoko, Michiharu Seki, and Katsuhiro Kaneko

ADSORPTIVITY OF DESULFURIZING ACTIVATED CARBON FOR SULFUROUS ACID GAS (II) - EFFECT OF THE ADSORPTION - RINSING PROCESS ON THE ADSORPTIVITY. *(Datsuryuyo kasseitan katei no eikyo). Text in Japanese. Preprint, Japan Chemical Society Tokyo, p. 828, 1971. (Presented at the Japan Chemical Society Annual Meeting, 24th, Tokyo, March 1971, Paper 3418.)*

The factors in the production and a decrease in sulfur dioxide adsorptivity were studied. Using various types of adsorbent manufactured from charcoal and coal, the sulfur dioxide adsorptivity by the type of the adsorbent, the correlation between the surface area and the sulfur dioxide adsorptivity, and the varying SO2 adsorptivity observed when the adsorbent was treated with air or subjected to SO2 adsorption-rinsing cycle or given a sulfuric acid immersion treatment in a laboratory were examined. The SO2 adsorptivity of activated carbon differs according to the origin of the material. There is a valid correlation between the surface area and the SO2 adsorptivity only when the adsorbent is made of the same material. The adsorptivity decreases when the activated carbon is kept in the air at 110-150 C and the decrease is greater when the temperature is higher, because of the decrease being the superficial oxidation of the activated carbon. The adsorptivity decreased when cycle of adsorption with 2% SO2 mixed gas and rinsing with water by soxhlet extraction was experimentally repeated, the adsorptivity remained unchanged when immersed in hot 20% sulfuric acid and the adsorptivity decreased by about 10% when activated carbon was immersed in hydrochloric acid and its soluble ash content thereby removed. There is a point of activation inherent to the activated carbon at which it functions as SO2 adsorbent. The point of activation is affected more by the material of the activated carbon, the manufacturing process, and the conditions of use such as adsorption-rinsing process more than the surface area of the activated carbon.

12239 APTIC NO. 29477

Yamanaka, Tatsuo

UTILIZATION OF CATALYST IN AIR POLLUTION CONTROL (4). *(Kogai boshi gijutsu ni okeru shokubai no riyo). Text in Japanese. Kagaku Kogyo (Tokyo), 22(5):705-710, May 1971. 7 refs.*

Although the catalyst system is the most practical control method for automotive emissions, it has many problems. With automobiles, the catalyst should be designed to cater to the requirements of the engine and other conditions, and has to withstand use for a minimum mileage of 50,000 kms. The flow quantity of gas, the constituents of gas, and the emission temperature all sharply fluctuate. The gas flow is a pulse flow. Therefore, the surface of the catalyst must be solid which results in some reduction of catalytic activity. Since the catalyst starts the purification process within 30 seconds after the engine is started, it should possess low-temperature activation characteristics. However, when the temperature finally rises to 1000 C or higher as the oxidation reaction continues, the catalyst becomes half-molten. The catalyst usually begins to melt at about 500 C, whereupon its performance deteriorates. Since it is impossible for a single catalyst to function over such a wide range of temperatures (50 C to 1000 C) compromise catalyst which will work over the 150 or 200 C to 700 or 800 C range is being developed jointly by the automobile and catalyst industries. Shock-proof performance, limited space for installation, soot or mist-resistant performance are among the other problems that have to be solved. Catalysts for removal of hydrocarbons, carbon monoxide and nitrogen oxides are discussed with their inherent problems.

12240 APTIC NO. 29898

Yamanaka, Tatsuo

UTILIZATION OF CATALYST IN AIR POLLUTION CONTROL (5). *(Kogai boshi gijutsu ni okeru shokubai no riyo (5). Text in Japanese. Kagaku Kogyo (Chem. Eng.), 22(6):809-814, June 1971.*

Four different types of 2-5 m spherical grain catalysts, impregnated with precious metal, were tested in 8 cars driven in city streets and 8 driven on highways. Each group consisted of 4 gasoline-fueled cars and 4 fueled with liquid propane. Removal efficiency for carbon monoxide and hydrocarbons was measured at the time of installation and when the mileage run reached 20,000 km. The initial and after-20,000 km rates of reduction in the highway tests were 77% and 92% for CO and 77% and 52% for HC with the gasoline-fueled cars; rates in the propane vehicles were 98% and 81% for CO and 71% and 69% for HC. Removal efficiency of the catalyst for both CO and HC is lower after the car has been run for 20,000 km compared with that at the time of installation, although the ability to remove CO drops less than it does for HC. In fact, 8 of the 16 cars tested indicated a CO emission of less than 1% and 5 of the 8 gave a CO emission of less than 0.3%. The highway tests were continued up to 50,000 km and compared with the urban-area tests. Most of the purification ability was lost with urban-area driving after 10,000 km, in the case of a gasoline-fueled car. It dropped after 40,000 km in highway driving; the purification efficiency was still higher than that after 10,000 km of urban driving. With an LPG car, the efficiency did not drop as much even when the car was driven in the urban area, indicating that deterioration is caused by the lead content of the fuel. Since the toxic action of the lead occurs when liquid water is present, it does not appear at high temperatures, where there is no water. However, at the catalyst temperature of 100 C or lower, as in low-speed driving, both the lead compound and liquid water are present, thus causing poisoning of the catalyst by the lead.

12241 APTIC NO. 29909

Yanagihara, Shigeru

STUDY ON AUTO EXHAUST. *(Jidosha haiki nikansuru kenkyu). Text in Japanese. Kokuritsu Kenkyujo no Kenkyu Seika (Researches of Government Research Inst.), 1969:294, Dec. 1969. 16 refs.*

A measurement method, the relation between the performance factors and the exhaust composition, and exhaust cleaning techniques were studied on exhaust from a 2-cycle gasoline engine. Hydrocarbons were not reduced by adjusting the engine performance. The use of an afterburner had material difficulty. The fuel-ejection method is still under study. Smog-forming agents and lubricants were also studied. In the field of diesel engines, combustion process control by the wall temperature of the combustion chamber was studied. Basic studies were also made to improve the combustion of LPG. An environmental laboratory was employed for a quantitative study on the effect of atmospheric conditions on engine performance and the combustion process. The importance of atmospheric conditions in the study of exhaust problems is emphasized, suggesting the necessity of the use of a compensator for atmospheric conditions on exhaust control devices.

12242 APTIC NO. 29742

Yoshioka, Haruo

DESULFURIZATION. *(Juyu datsuryu). Text in Japanese. Preprint, Association of Safety Engineering, Yokohama (Japan), 23p., 1970. 5 refs. (Presented at the Association of Safety Engineering Seminar, 17th, Yokohama, Japan, Feb. 1970.)*

Under an oil industry law, newly established oil refineries or enlarged facilities must include desulfurization equipment. By 1973, the average sulfur content in fuel is to be 1% (by 1978, 0.55%) in congested areas such as Tokyo-Yokohama, Osaka-Kobe, and Yokkaichi; 1.3% (0.8% in 1978) in less congested areas such as Chiba, Kitakyushu, Muroran, and Nagoya; and 1.5% (1% in 1978) in areas such as Kashima, Oita, and Tsurusaki where pollution is expected. A method of using oxidized metals and the use of microbes are mentioned. The JIS specification divides heavy oil into A, B, and C grades. Grade A is the lightest, mainly light oil, but the C grade heavy oil mainly consists of residual oil which requires desulfurization. There are two types of desulfurization, indirect and direct. The Isomax, HGO unicracking, unifining, and gulfining methods, the power required, operating costs, and desulfurization costs are described. Direct desulfurization employs catalysts, mostly cobalt, nickel, or molybdenum, with tungsten sometimes is added. Silica or silica alumina are used as carriers. Disposal of extra asphalt is a significant problem in Japan, in the United States, a hydrogenization cracking system for asphalt is already in operation.

12243 APTIC NO. 29625

Zeitz, A. H.

FUTURE OF GASOLINE WITH LEAD ANTIKNOCKS. *Mining Congr. J., 57(3):39-45, March 1971. 12 refs.*

Lead antiknock compounds are essential ingredients of today s motor gasoline and are used in over 98% of these fuels. The use of lead allows gasoline to be manufactured to today s quality standards at a cost saving of 1 1/2 to 6 cents per gallon at the refinery level. Restrictions of antiknocks would require a substitution which would result in increasing the aromatic content of gasoline in order to maintain octane ratings. Increased concentrations of aromatics in the fuel would increase photochemical smog, as well as increase the eye irritating effect of the exhaust, and perhaps bring about a risk of increasing polynuclear aromatics. Aldehydes decrease in the presence of lead antiknocks, while premature valve damage occurs with unleaded gas.

12244 APTIC NO. 29650

Zimmerman, Mark D.

POLLUTION TECHNOLOGY–WHAT THEY RE DOING OVERSEAS. *Machine Design, 42(29):20-21, 23-25, 27, 30, Nov. 1970.*

Solutions to pollution problems from overseas are discussed. The world s first operational plant for completely recycling waste water was built in Windhoek, Southwest Africa. A sulfate digester is being built by Karlstads Mekaniska Werkstad, Stockholm, for a Billerud pulp mill near Gruvon, Sweden. Sludge-aeration systems have been built. Toilets are being redesigned to save water and be sprayed clean. A German pollution control firm offers a wide variety of electrostatic precipitators, venturi scrubbers, centrifugal collectors, catalytic reactors, filters, and cyclones for cleaning waste air or gases. Methods of refuse disposal are cited. British researchers tat the University of Aston are experimenting with additives that make plastics decompose when exposed directly to the ultraviolet rays of sunlight for about two months. Methods of handling oil slicks are being developed, and alternatives to power generation are being sought.

12245 APTIC NO. 30133

Zverev, N. I. and S. G. Ushakov

EXPERIMENTAL INVESTIGATION OF THE PROCESS OF CENTRIFUGAL DUST SEPARATION. *Thermal Eng. (English translation from Russian of: Teploenergetika), 17(7):34-37, July 1971. 7 refs.*

Centrifugal separators are used for dust separation in many industries, including power stations. Mathematical simulation made it possible to establish a number of the features of the mechanism; however, they did not consider the influence of dust particles on each other and on the flow, the effect of the turbulent fluctuations on the motion of the solid suspension, and a number of other factors. Therefore, a physical simulation of the separation process was carried out in a single-stage centrifugal separator. The initial, fine, and coarse products were separated with standard sieves, and the size distribution was determined. The density of the dust, initial dust size, and the air velocity were varied. Dust of coal, corundum, and ferrochrome were also used to test the separator. From these tests, the influence of various factors on separator efficiency was determined.

MEASUREMENT METHODS

12246 APTIC NO. 29891

Karolinska Inst., Stockholm (Sweden), Dept. of Environmental Hygiene

METHODS FOR MEASURING AND EVALUATING ODOROUS AIR POLLUTANTS AT THE SOURCE AND IN THE AMBIENT AIR. *77p., 1970. 114 refs. (Discussions of Working Papers presented at the Third Karolinska Institute Symposium on Environmental Health, Methods for Measuring and Evaluating Odorous Air Pollutants at the Source and in the Ambient Air, Stockholm, Sweden, June 1-5, 1970.) Also: Nord. Hyg. Tidsk., 51(2), 1970.*

Odor problems are associated with a variety of sources such as industrial installations, farm yards, and urban areas with heavy traffic. The procedure in studying environmental nuisance is ultimately based on an effort to find the relationship between the dose to which the public is exposed and the annoyance reaction displayed. A detection methodology is detailed for the following aims: to study the relative importance of various odoriferous processes in regard to the ultimate odor intensity of the emission; to study the effectiveness of various odor control systems; to measure source intensity by determining odorant levels in discharges; to forecast odor distribution and intensity at various distances from a source; and to investigate the feasibility of predicting odor intensity from the chemical and physical characteristics of the discharge. The effects on humans are also discussed. Conclusions and recommendations for future research on physicochemical methods, sensory methods, and responses to odor exposure are made.

12247 APTIC NO. 30013

SMOKE PLUMES MONITORED DAY AND NIGHT. PRACTICAL EXPERIENCE WITH A TV-LASER PLANT IN DUISBURG. *(Rauchfahnen Tag und Nacht ueberwacht. Praktische Erfahrungen mit einer Fernseh-Laser-Anlage in Duisburg). Text in German. VDI (Ver. Deut. Ingr.) Nachr. (Berlin), 25(10):1, 11, March 10, 1971.*

Practical experience with a TV camera and a light detection and ranging (lidar) unit, established in 1969 in an industrial center in Duisburg for day and night monitoring of smoke plumes is discussed. The TV camera observes and identifies the lidar unit measures emissions. About 30 cases of illegal pollution were unconvered with the TV camera on the basis of pilot operation with the monitoring system, further developments are considered necessary for routine operation; the light detection and ranging unit in particular must be improved. Experience has shown that combination of the two is necessary. Operations strongly indicate that a mobile system is preferable to a stationary monitoring system.

12248 APTIC NO. 30118

SOURCE SAMPLING OF ATMOSPHERIC CONTAMINANTS. *Chem. in Can., 23(5):12-13, May 1971.*

At a recent symposium on source sampling, it was noted that source sampling is the key to a successful and practical abatement program and that the largest growth in sales of air pollution instrumention should occur in the field of stationary source monitoring. Within this field, automatic monitoring is expected to assume an increasingly important role. Continuous monitoring is also important. Of the particulate monitors now under development, one of the most promising is based on a Beta-ray scanning of dust caught on a filter tape. In connection with stack dust measurements, the object should be to determine not merely weight concentration of dust but rather the total emission rate. This is the only logical basis for appraising an emission, since the ground level concentration is directly proportional to the rate of emission at the source. Particle size is an important variable to be considered in monitoring and removal systems.

12249 APTIC NO. 29068

Abril, P.

A NEW METHOD OF MEASURING THE OPACITY OF COMBUSTION FUMES. *(Nouvelle technique de mesure de l'opacite des fumees de combustion). Text in French. Tech. Moderne, 63(2): 79-82, Feb. 1971. 1 ref.*

To remove shortcomings of classical opacimeters, a new unilateral emission and detection opacimeter OPASTOP 6 has been developed consisting of a platinum transmitter-receiver, an electronic recorder and two 1.2-2.4 m long fiber-optic cords connecting the electronic package with the platinum detector. The electronic box contains a projector, a ventilator, a measuring cell for constant temperature so that the signal emitted by the cell is not affected by changes in the ambient temperature, an integrated circuit and an alarm relay. Particles suspended in a flue gas reflect light towards the optical receptor cord connecting the opacimeter proper with the electronic recording box. The divergent light beams illuminating the gas particles are emitted by the projected in the recording box. A platinum transmitter receiver attached to one side of the flue duct holds the heads of the two optical cords at an angle of 90 degrees. The great sensitivity of this opacimeter and its connection with a combustion regulator assures the automatic correction of combustion.

12250 APTIC NO. 30116

Adee, R. R.

A CONVENIENT METHOD FOR APPLYING A SUPPORTING FILM TO GRIDS USED ON WALKENHORST THERMAL PRECIPITATOR PLUGS. *Am. Ind. Hyg. Assoc. J., 32(4):268-270, April 1971. 2 refs.*

The Walkenhorst thermal precipitator deposits airborne particles on electron microscope grids bearing a supporting film. The particles are then shadow-coated with metal such as chromium, and observed in the electron microscope to determine structure, size distribution, and other characteristics of interest. Correct placement of grids on the precipitator plug and of the film on the grids is essential, since irregular surfaces result in uneven particle distribution and/or selective deposition of particles on grid bars. A suggested placement method involves stripping a formvar film from a glass slide onto the surface of a vessel of clean water, lifting the film with a wire loop, and then lowering the loop with the film over the precipitator plug on which grids are properly oriented on platinum tipped posts. The film holds the grids in proper position flush with the plug surface, yet removal of the grids after exposure presents no problem.

12251 APTIC NO. 29765

Aken, Ch. van

POLLUTION TESTS ON IDLING GASOLINE MOTORS. *(Pollutiecontrole van benzinemotoren bij nullast). Text in Flemish. Alg. Gedeelte, 83(9):143-149, March 5, 1971. 8 refs.*

The inspection of gasoline motors to determine whether the emission of carbon monoxide and hydrocarbons is above permissible levels requires an accurate method of measuring the CO concentration. The most accurate measurements are those made when the vehicle is traveling at high speeds, but the cost and other difficulties of running high speed tests make this prohibitive. Tests made with idling motors are much more practical and economical, but the measured results are less representative of the actual polluting characteristics of the motor. For example a simple adjustment of idling speed will give an idling value of CO that is only 30% of the value measured for the entire cycle. In Belgium, the law requires an inspection of passenger vehicles every 4 years and of commercial vehicles every year, to determine their output of carbon monoxide. A formula has been derived for correcting the idling value, so that it represents the average CO value for the whole cycle of vehicle operation. The measured CO content (expressed as %) is multiplied by 15 and then divided by the sum of the CO content plus the CO2 content. If this latter sum is not less than 15, the correction factor need not be used. The newly derived formula was checked experimentally to determine the influence of various parameters on the CO values obtained. These included the make of car, year of manufacture, mileage, idling speed, and the manner in which the measurements were made. A statistical study was made of CO content as a function of idling speed, using data from inspections of more than 700 cars. The uncorrected CO concentration was less than 4.5% in 41.3% of the cars inspected. After the correction formula was used, only 33.2% of the cars were below the 4.5% concentration.

12252 APTIC NO. 29557

Andre, M.

THE PROBLEM OF REPRESENTATIVE SAMPLING. CONDITIONS FOR CORRECT USE OF AN APPARATUS FOR SAMPLING. *(Le probleme des preleve-*

ments representatifs. Conditions d utilisation correcte d un appareil de prelevement). Text in French. Lab. Central des Services Chimiques de L Etat, Paris (France) and Inst. National de Securite pour la Prevention des Accidents du Travail et des Maladies Professionnelles, Paris (France), Colloq. Securite Sociale Serv. Prevent., 3rd, Paris, France, 1955, p. 81-85. (Nov. 3-5.)

To determine dust conditions in relation to acceptable working conditions, several sets of test specimens must be provided in the course of a day at certain locations, and appropriate to the work cycles. To ensure proper conditions for the correct interpretation of dust concentration, special care in handling of filters is recommended when using A.R.M. apparatus. Each filter should be checked before being put to use, and those soiled by fingerprints should be eliminated. When opening a box of filters in a location with a dusty atmosphere, an exposed new filter will retain some dust. Therefore, it is advisable to start with a new box on the outside and in less polluted areas, and use it up in a location with greater dustiness. In case of considerable dust concentration, each dust-carrying filter should be covered with another filter for retention and absorption of excess dust. If a number of filters from one box is used in places of considerable dustiness, the remaining filters from the same box should not be used in clean locations. The particle content determination is usually done at 300 times magnification. To keep the error factor to a reasonable minimum, undue fatigue of operator s eyes should be avoided, and his eyesight periodically checked. The four most convenient methods of analysis for determining the quartz content in dust are thermal differential analysis, chemical analysis with phosphoric acid or sulfuric acid, and x-ray diffraction.

12253 APTIC NO. 29541

Avy, A. P. and A. Popot

APPARATUS FOR TEST PREPARATION IN VERY HUMID ATMOSPHERES AND IN PARTICULAR AT DRILLING OPERATIONS. *(Sur un appareil de prelevement utilisable dans les atmospheres tres humides en particulier dans les operations de forage). Text in French. Lab. Central des Services Chimiques de L Etat, Paris (France) and Inst. National de Securite pour la Prevention des Accidents du Travail et des Maladies Professionnelles, Paris (France), Colloq. Securite Sociale Serv. Prevent., 3rd, Paris, France, 1955, p. 12-14. (Nov. 3-5.)*

The simple device described for dust sampling in narrow-mining areas with humid air and muddy floors does not require any outside electrical supply. It comprises a hand-operated pump with a rubber-clad piston which can move 100 cu m of air per stroke. A very small filter is used which is subsequently dissolved in 2.5 cu m of cyclohexanone a volatile solvent. Particles are observed and counted from droplets of the solution. The results are comparable to those obtained by regular methods. An error factor of 30% is acceptable since the tests were routine ones, where the order of magnitude of the results served the purpose.

12254 APTIC NO. 29544

Avy, A. P. and A. Popot

A PHOTOGRAPHIC METHOD OF DETERMINING THE EMISSION OF DUST GENERATED BY INDUSTRIAL MACHINERY. *(Methode photographique de controle de l emission de poussieres par les appareillages industriels). Text in French. Lab. Central des Services Chimiques de L Etat, Paris (France) and Inst. National de Securite pour la Prevention des Accidents du Travail et des Maladies Professionnelles, Paris (France), Colloq. Securite Sociale Serv. Prevent., 3rd, Paris, France, 1955, p. 14-18. (Nov. 3-5.)*

In studying a method for making photographs of dust clouds generated by industrial machinery and for the interpretation of the dust characteristics, gypsum, enamel, and steel were ground on a rotary grindstone. The immediate environment of the machine was kept as dark as possible with screens. The photo exposure was made with a flash light. Subsequent evaluation of the pictures revealed, for the enamel cloud, 80,000 fine particles per liter of air, at the level of the operator s nose and mouth, 900,000 at the underside of the grindstone, and three million at the outlet point of the rougher particles. With steel, the finding was 70,000 fine particles per liter at breathing height, corresponding to 0.8 mg per cu m of air, and 300,000 rougher particles per liter at the outlet, corresponding to 77 mg weight per cu m of air. Improved designs of machine guards were developed for containing the dust and thus protecting the operator.

12255 APTIC NO. 29811

Axelrod, Herman D., Joseph E. Bonelli, and James P. Lodge, Jr.

FLUOROMETRIC DETERMINATION OF BROMINE: APPLICATION TO MEASUREMENT OF BROMINE AEROSOLS. *Environ. Sci. Technol., 5(5):420-422, May 1971. 11 refs.*

A simple analytical procedure is described for measuring trace bromine with application to the determination of Br aerosols and particulates. The Br sample (0.5 ml) is added to a 9.5-ml solution made from 9 ml of 1.1 times 0.000001 M fluorescein in glacial HOAc and 0.5 ml of 30% H2O2. The sample is allowed to react for 45 min, and the fluorescence is measured at 440 nm excitation and 470 nm emission. The fluroescence is quenched by the Br, and the quenching amount can be related to the Br concentration through sample standards. Atmospheric samples can be obtained from high-volume air filters. The filters are washed with water, the liquid analyzed for Br. Greater effective sensitivity might be achieved by using glacial HOAc as a filter washing solution. A large excess of Cl(-) does not interfere with the anaylsis. This method can be used to determine as little as 2 ng/ml Br(-) in the final analysis solution. (Author abstract)

12256 APTIC NO. 29726

Baba, Yoshio

ON MEASUREMENT OF ODOR. *(Shuki no sokuteiho ni tsuite). Text in Japanese. Kogai (Hakua Shobo) Pollution Control, 6(1):50-56, Jan. 1971.*

In a bill to control obnoxious odors, methylamine sulfide, methyl mercaptan and ammonia and industries such as the livestock farms, food processing, garbage treatment, and pulp manufacturing are the objects for possible control. However, although the refinery and pulp mill both emit obnoxious odors of a sulfur origin, the odor from the steaming pot of the kraft pulp mill is mostly methylmercaptan; from refinery, dozens of sulfur compounds are emitted, not just methylmercaptan. If the concentration of methylmercaptan alone is to be the measured, because the concentration of methylmercaptan from refinery is so small, the kraft pulp mill would be placed at a disadvantage. In all fairness the total amount of sulfur should be added. Based on the ASTM, the sensory test is used for the measurement of odors. In Japan, the air dilution method (olefactometer method), the pressure ratio method, salt balance method, and odorless chamber method are used. The balance method is simple to handle and is the most widely used. The weakness of the sensory method is that it cannot be used for continuous measurement of air pollutants. In using instrumental measurements, there is a problem of detecting small amounts of odor constituents and relating the intensity of the odor suffered by the people to the components of the odor. Man can detect 0.1-0.005 ppm of hydrogen sulfide and 0.01-0.0001 ppm methylmercaptan, which is difficult to measure with instruments. However, there are gas chromatographs which are very sensitive, measuring 10 to the minus ninth g. Selective use of the gas chromatograph with an adequate trapping method must be made. A method for the extraction of odor components is also described.

12257 APTIC NO. 29749

Bahlo, K.

DETERMINATION OF THE SOOT INDEX IN WASTE GASES OF OIL BURNERS. *(Bestimmung der Russzahl in Abgasen von Oelfeuerungen). Text in German. Sanit. Heizungstech., 36(1):3, Jan. 1971.*

The soot index per German norm DIN 51402 serves for the qualitative characterization of the soot contained in waste gases from oil burners. It is sometimes also called Bacharach index, based on a reference scale first developed in the U.S.A. by the laboratories of the Shell Oil Co. in co-operation with the Bacharach Industrial Instrument Co., and publicized under the name Shell Bacharach Smoke Scale. The soot index refers to the degree of blackening on a white filter paper, caused by solid particles emanating from combustion. To determine the soot index grade, a certain volume of the waste gas is aspirated by a pump whose characteristics have to conform to DIN 51402, and whose inlet connection is fitted with a filter paper. The ensuing blackening of the filter is visually compared with a soot reference scale which consists of 10 areas of various degrees of blackness. In connection with a number of oil fired heating devices, special DIN norms are in existence which also specify admissible maximum soot index values. Among these devices are atomizing and vaporizing types of oil burners, oil stoves, and oil fired boilers for hot water heating, central heating, and air heating, respectively.

12258 APTIC NO. 30081

Bandyopadhyay, M. and M. K. Chakraborty

A MATHEMATICAL MODEL FOR MEASURING MASS/NUMBER INDEX OF RESPIRABLE AIRBORNE COAL DUST. *J. Mines, Metals, Fuels, 18(7):359-360, July 1970. 5 refs.*

The mass concentration for coal dust is believed to give the best indication of its pneumoconiosis hazard. However, a correlation exists between the mass concentration of respirable size range of airborne coal dust and the corresponding number concentration. This correlation is expressed as the Mass/Number Index (MNI). The MNI of respirable airborne coal dust can be theoretically represented by a mathematical function of its parameters. The MNI is related to the percentage of carbon content of coal and ash content.

12259 APTIC NO. 29630

Basco, N. and R. D. Morse

THE ADIABATIC FLASH PHOTOLYSIS OF NO2 AND SO2. *Proc. Roy. Soc. London, Ser. A, 321(1544):129-139, Jan. 1971. 18 refs.*

The well known temporary disappearance of the sulfur dioxide spectrum following flash photolysis under adiabatic conditions has been shown to be optical illusion induced by temperature broadening of the banded structure. A similar phenomenon has been observed for nitrogen dioxide following flash irradiation with wavelengths above 400 nm. The two spectra previously ascribed to a thermal isomer of SO2 have otherwise been accounted for. The first, a continuous absorption below 240 nm, is the result of temperature broadening and the other, a series of bands in the 180 nm region, belongs to one of the two new triplet systems of sulfur monoxide. These two systems of SO fit a Rydberg series for an ionization potential of 9.8 eV. (Author abstract)

12260 APTIC NO. 29955

Bernert, Juergen

EMISSION MONITORING WITH ACKNOWLEDGED MEASURING UNITS AND ANALYZERS. *(Emissionsueberwachung mit anerkannten Mess-und Analysengeraeten). Text in German. Wasser Luft Betrieb, 15(4):123-127, 1971. 13 refs.*

The Ministry of the Interior has recognized the infrared analyzer URAS and the conductivity analyzer Mikrogas-MSK as suitable units for measuring sulfur dioxide emissions from hard coal and oil-fired furnaces, as well as the smoke density measuring units RM 3g and D-R/110 for measurements of the dust content and the smoke density of waste gas. The URAS analyzer is calibrated in percent by volume. Its indication is dependent on the pressure and the temperature of the gas; as far as possible, the influence of these parameters on the results must be avoided. According to Lambert-Beer s law, the calibration curve follows an exponential function. The URAS measures absorption by a nondispersive method. The Mikrogas unit measures changes in the electric conductivity of an electrolyte consisting of diluted hydrogen peroxide solution (2.0 ml 30% H202/l of distilled water with a conductance of less than 10 microhm/cm). The change in conductance caused by SO2 absorption is indicated directly in g SO2/cu m of waste gas. The principle of the two smoke density measuring units is also based on light extinction following Lambert-Beer s law, with the difference that the normal radiation range is used ans that light extinction is achieved through dimming by the dust contained in the waste gas.

12261 APTIC NO. 29579

Beynon, J. H. and A. E. Fontaine

INSTRUMENTS AND THEIR APPLICATIONS IN MASS SPECTROMETRY. *Instr. Review, 15(193):34-37, Jan. 1969.*

Mass spectrometry equipment is listed which is commercially available in the United Kingdom. Information includes model number geometry and dimensions, resolution, mass range, ion sources and sample inlet systems, ion detectors and display, applications, features, e.g., price. Data are also given on Soviet mass spectrometers. They consist of a series of single-focusing analytical mass spectrometers. Information includes type, magnetic analyzer, resolution, mass range, source, detection and display and applications.

12262 APTIC NO. 29887

Biheller, Johann and Werner Resch

TESTS WITH A SAMPLING AND MEASUREMENT METHOD FOR ROUTINE DETERMINATION OF FLUORINE IN THE LOWER ATMOSPHERE. *(Erprobung einer Sammel- und Messmethode fuer die routinemaessige Bestimmung von Fluor in der bodennahen Atmosphaere). Text in German. Staub, Reinhaltung Luft, 31(1):9-11, Jan. 1971. 15 refs.*

A polystyrene filter impregnated with 10% sodium-formate solution in 50% alcohol was used to sample fluorine in the lower atmosphere. Preliminary results with this filter indicated that it had a high resistance, particularly at high humidity. A maximum of only 4 to 5 cu m/min air could be drawn through the filter. At low humidity, the throughput was 200 to 400 l/min. The filter was therefore modified, after which 12 experiments were carried out. For three experiments, the filter received 7.5/mg impregnation. This quantity was then raised to 15, 150, and 300/mg per filter. The experiments showed that a filter with a surface of 78.5 sq cm and containing 300/mg Na-formate absorbs more than 99% of the hydrogen fluoride present. At lower Na-formate quantities, the filter resistance drops but the percentage of HF absorbed is reduced. The content of F ion in the samples was determined by dissolving the filter in ethyl acetate, agitating with a buffer, and analysis with an F-ion selective electrode. Fluorine analyses in Graz, Linz, and Vienna show the method is highly sensitive and suitable for routine measurements.

12263 APTIC NO. 29546

Bouffant, L. Le

COMPARISON OF VARIOUS METHODS OF DETERMINING QUARTZ CONTENT IN NOXIOUS DUST. *(Comparaison des diverses methodes de dosages du quartz dans les poussieres nocives). Text in French. Lab. Central des Services Chimiques de L Etat, Paris (France) and Inst. National de Securite pour la Prevention des Accidents du Travail et des Maladies Professionnelles, Paris (France), Colloq. Securite Sociale Serv. Prevent., 3rd, Paris, France, 1955, p. 58-61. (Nov. 3-5.)*

Of methods requiring not more than 50 to 60 mg samples for the analysis of the quartz content in dust, the first described employs phosphoric acid; 10 mg of the material are sufficient for analysis. The second method is X-ray diffraction, where the instrumentation includes a Geiger counter. The third, thermal differential analysis, requires a crucible with two recesses, one to take a compacted pastille of the powder sample of three mm diameter and four mm height, and the other to accommodate a reference pastille of aluminum. Thermocouples are inserted in both materials. The thermal transformation is recorded by a highly sensitive potentiometer recording instrument. This technique requires 50 to 60 mg samples only. It can be employed for routine analyses of noxious dust in industrial shops and mines. In a reported laboratory test, dust samples of sizes between 0.5 and 15 microns were used, all of them originating from the same quartz rock. While results of the three methods of analysis showed some differences, all indicated considerably less quartz content in the smaller particle sizes than in the larger ones, perhaps because the process of quartz dust generation causes a change in the crystalline properties of the surface layer of the quartz grains.

12264 APTIC NO. 29848

Bowman, Worth B., L. T. Caruthers, and Ronald B. Maxwell

PRODUCTION OF GASES OF KNOWN SPECIFIC ACTIVITY IN A REACTOR FOR CALIBRATING GASEOUS EFFLUENT MONITORS. *Health Phys., 20(3): 337-339, 1971. 2 refs.*

The activation of a continuously flowing gas in the neutron flux of a reactor was investigated for the purpose of generating a gas whose specific activity at the stack monitor detector is known. Calibration is thereby done with the detector in its normal operating configuration and storage of radioactive gas is not required. The method was applied using Ne(23) and Ar(43). Pertinent calculated results are presented for an error analysis for each gas, and the importance of flow rate regulation is shown to be small for the gases.

12265 APTIC NO. 30084

Butyugina, E. M. and M. D. Kazakova

DEVELOPMENT OF A METHOD FOR DETERMINING SULPHUR OXIDES IN FLUE GASES. *Thermal Eng. (English translation form Russian of: Teploenergetika), 17(6):39-43, 1970. 7 refs.*

To solve the problems of corrosion by sulfur dioxide and sulfur trioxide, a reliable measurement method was developed. Sulfur oxides in flue gases are reliably determined by absorption of the gases in isopropyl alcohol followed by titration with barium perchlorate, thoron being used as an indicator. This colorimetry method is suitable for lower concentrations of sulfur oxides. It s advantages include the possibility of determining the total quantity of sulfates in a slightly acidic organic medium, which eliminates the introduction of a correction for neutralization of the absorber.

12266 APTIC NO. 30019

Byers, R. Lee, John W. Davis, Eugene W. White, and Ralph E. McMillan

A COMPUTERIZED METHOD FOR SIZE CHARACTERIZATION OF ATMOSPHERIC AEROSOLS BY THE SCANNING ELECTRON MICROSCOPE. *Environ. Sci. Technol., 5(6):517-521, June 1971. 10 refs.*

The scanning electron microscope, interfaced with a digital computer, is shown to be capable of producing reliable size measurements of atmospheric particulate matter by the rapid processing of images of a large number of particles. Samples were collected with a Bendix Model 959 electrostatic precipitator in a number of central Pennsylvania communities. Along with the precipitator, two Hurricane Model 16003 samplers were set up, one with a 4-inch diameter glass fiber filter and the other with a standard 8 by 10-inch filter. The phenomenon that is the basis for SEM imaging is the emission of low energy secondary electrons; it is the variation in secondary electron emission intensity at different positions over the specimen surface that provides the contrast mechanism in SEM images. The intensity of secondary electron emission is a function of the material, the position of the detector, and, more important, the angle of inclination of the surface to the incident beam. Recording parameters and programs for processing digital image data are discussed. Limitations and advantages of scanning electron microscopy are cited.

12267 APTIC NO. 30041

Cabrol, C., A. Chapuis, and L. Commanay

ATMOSPHERIC POLLUTION. APPARATUS FOR MEASURING THE CONCENTRATION OF CONDENSATION NUCLEI IN THE ATMOSPHERE. *(Pollution atmospherique. Appareil de mesure de la concentration des noyaux de condensation dans l atmosphere). Text in French. Rev. Med. Toulouse, 7(8):587-591, 1970. 8 refs.*

A condensation nucleus is any particle which can, in a supersaturated atmosphere, become the nucleus of a tiny drop of water. These nuclei, which are of different sizes, may originate from combustion gases, dust, or from gaseous photolysis. A simple apparatus is described which measures the number of condensation nuclei. This apparatus was used to determine nuclei from atmospheric pollution in a suburban zone and in a mine gallery.

12268 APTIC NO. 29854

Carabine, M. D., J. E. L. Maddock, and A. P. Moore

PARTICLE SIZE DISTRIBUTION IN AEROSOLS FORMED FROM GASEOUS REACTANTS. *Nature, Phys. Sci., 231(18):18-19, May 3, 1971. 4 refs.*

Size distributions of particles in ammonium chloride and ammonia/sulfur dioxide aerosols were deduced from angular light scattering intensities measured with a helium-neon laser light source. A comparison of the scattering measurements for the NH4Cl aerosol with those calculated for known size distribution shows good agreement for particles below one micron. For the deduction of size distributions from scattering intensities to be feasible with an instrumental precision of 4%, aerosol modal diameter should be of the order 0.2 micron and the spread parameter below 0.7. The present experimental accuracy gives the modal diameter within 20% and the spread diameter within 5%.

12269 APTIC NO. 29521

Chan, S. H. and C. L. Tien

INFRARED RADIATION PROPERTIES OF SULFUR DIOXIDE. *Trans. ASME (Am. Soc. Mech. Engrs.), 93(2):172-178, May 1971. 23 refs. (Presented at the American Society of Mechanical Engineers, Winter Annual Meeting, New York, Nov. 29-Dec. 3, 1970, Paper 70-WA/HT-4.)*

The low resolution measurements of infrared absorption are presented for several bands of sulfur dioxide. These measurements were performed at room temperature and at the optical pathlengths such that the data cover the transition and strong absorption regions. The apparatus comprised a source unit, the absorption cell, and a monochromator with a sodium chloride prism. Spectral data were correlated in terms of the line strength and the line shape parameters by use of the Elsasser model while the Edwards exponential wide-band model was employed to correlate the total band absorptance data. Total emissivity was then calculated from these total band absorptance correlations to compare with Hottel s result. Hottel s result was found to be much higher than the present calculations, and possible causes for such a large discrepancy in Hottel s result are discussed. (Author abstract modified)

12270 APTIC NO. 29851

Closson, A., C. Nicotra, P. Perilhon, and A. Cornu

STUDY OF POLYCYCLIC HYDROCARBONS FIXED ON ATMOSPHERIC DUSTS. *(Etude des hydrocarbures polycycliques fixes sur les poussieres atmospheriques). Text in French. Pollut. Atmos. (Paris), 12(48):239-244, Oct.-Dec. 1970. 8 refs.*

The application of a method, enabling organic products fixed on dusts to be extracted and aromatic compounds to be separated from olefinic ones, is described. Chromatography on cellulose allows the fluoranthene benzo, chrysene, and pyrene to be isolated. The main advantage of this method is that it is accurate and selective, and effectively contributes to the study of air pollution.

12271 APTIC NO. 29751

Corn, Morton and G. Burton

THE IRRITANT POTENTIAL OF POLLUTANTS IN THE ATMOSPHERE. *Arch. Environ. Health, vol. 14:54-61, Jan. 1967. 43 refs. (Presented at the American Medical Association, Annual Air Pollution Medical Research Conference, 8th, Los Angeles, March 2-4, 1966.)*

Gradually, and almost imperceptibly, over the last ten years the meaning of the term irritant has been altered; it is now used to describe a group of substances which elicit other types of human and animal responses, as well as inflammation. Today, the most widely accepted indicators of acute irritant action are airway resistance and lung compliance. Consideration of recorded U. S. average concentrations of single gaseous or particulate pollutants indicated that alterations in airway resistance and lung compliance in animals or man have not been demonstrated after inhalation of single irritants at these concentrations. At this time, it is difficult to speculate on the acute or chronic changes produced, if any, in these functional measurements by inhalation of complex mixtures of low concentrations of individual irritants. Certainly, eye irritation demonstrates that effects which are not predictable on the basis of the action of a single irritant are produced by mixtures of irritants. Airborne particulate pollutants should be assessed with respect to aerodynamic particle size because (1) chemical composition of particles has been demonstrated to vary wit size, and (2) only certain particle sizes present in polluted atmospheres are capable of reaching receptors after inhalation by man. Among the defects of present routine sampling methodologies are (1) size distribution of sampled particles is not known, (2) th optimum density of sampling stations for the procurement of reliabl results is unknown, and (3) the irritant potential of pollutant mixtures is not taken into account when single pollutants are evaluated. (Author summary modified)

12272 APTIC NO. 29634

Dailey, W. V., R. W. Lawrence, and S. O. Peterson

ANALYZERS FOR MONITORING AIR QUALITY IN POLLUTION. *Instrument Society of America, Pittsburgh, Pa., Proc. Instr. Soc. Am. Nat'l Conf. Instr. Iron Steel Ind. 1967, vol. 17:11-1 to 11-9. 7 refs.*

A survey is presented of instruments available for air quality monitoring purposes and for stack emission measurements from chemical, power, and metallurgical processes. The instruments described employ chemical, physical, or electronic techniques and enable compounds to be measured directly in the ppm and pphm range or integrated over a selected period of time. The appropriate instrument for a specific application or specific contaminant is noted, with special reference to sulfur dioxide, nitrogen dioxide, hydrogen sulfide, total hydrocarbons, and carbon monoxide.

12273 APTIC NO. 29560

Delplanque, H.

DETERMINATION OF A DOCTRINE FOR VALID SAMPLING. *(Sur la fixation d une doctrine de prelevement valable). Text in French. Lab. Central des Services Chimiques de L Etat, Paris (France) and Inst. National de Securite pour la Prevention des Accidents du Travail et des Maladies Professionnelles, Paris (France), Colloq. Securite Sociale Serv. Prevent., 3rd, Paris, France, 1955, p. 88-92. (Nov. 3-5.)*

Suggestions are made for a program of air sampling in industrial plants that will reflect the changing situations to which the workers are exposed. A monography of the plant, should first be developed, showing in diagrammatic form the various groups of operating personnel, individual items of equipment involved, and their locations. Once this is done, the sampling can be planned. In one example given, air samples were taken at various stages of demolition and removal of an open hearth steel furnace. In another, a time chart shows the 13 operations that took place in taking dust samples during a ten minute time span when raw materials were brought into a glass factory.

12274 APTIC NO. 29757

Dmitriev, M. T. and V. Z. Alperin

AN AUTOMATIC COULOMETRIC ANALYZER OF OZONE IN THE ATMOSPHERE. *(Automaticheskiy kulometricheskiy analyzator ozona v atmosfernom vozdukhe). Text in Russian. Gigiena i Sanit., 36(2):54-58, 1971. 5 refs.*

An automatic coulometric analyzer for determination of atmospheric ozone is described. The electrolytic cell consists of 3 chambers filled in the electrolyte: measuring, auxiliary electrode, and reserve electroyte chamber. The measuring electrode (cathode) is made of 2 cylindrical pt grids. Aspirated air is bubbled through the electrolyte and passes gradually through first and second pt grids, which ensures complete ozone absorption. The auxiliary electrode (anode) is perforated carbon and covered by pt grid and sprayed with active coal, separated from the measuring chamber by an ion-exchange membrane. Another pair of short-circuited electrodes is introduced to minimize electrolyte flow. The electrolyte is 2% NaBr, 0.1% Na2HPO4, 0.1% Na2HPO4, and 0.01% NaI in water. When passing through the measuring chamber, ozone reacts with bromide to release molecular bromine and O(-2). The former is again reduced oncathode to bromide. As a result, an electric current is generated in a coulometric cell, which is proportional to ozone concentration. At the same time, NaBr is recovered and oxygen is chemisorbed on the C anode. The use of NaBr of low concentration minimizes interference of NO2. Presence of iodine and SO2 do not interfere with ozone determination. For its high sensitivity (.0001 micrograms), simple design and small size, the analyzer is recommended for use in sanitary-hygienic research.

12275 APTIC NO. 29844

Duckworth, Spencer

A SIMPLE TECHNIQUE FOR MEASURING MEAN H2S CONCENTRATION. *J. Air Pollution Control Assoc., 21(5):280-283, May 1971. 4 refs.*

Lead acetate-impregnated ceramic tiles are useful devices for determining hydrogen sulfide levels in outdoor air. The exposure of the tiles in simple shelters and for an overnight period is effective in an areawide sampling program to determine (1) whether a significant H2S source exists, (2) the source location, (3) the area affected, and (4) the relative intensity pattern. On the basis of an overnight exposure, tiles can see a mean H2S concentration range of 0.003 to 0.3 ppm. The lower level of sensitivity is near 0.03 ppm times hr. Hence, tiles offer a way to verify whether hourly air quality standards are being exceeded. Tiles can be qualitatively evaluated against experience, known effects, or by ranking against each other; they can be semi-quantitatively evaluated by visual grading against painted standards developed by exposing tiles of particular manufacture to known H2S dosages. (Author abstract modified)

12276 APTIC NO. 30082

Eggleton, A. E. J.

A COMPREHENSIVE SAMPLING SYSTEM FOR STUDYING THE RELATION BETWEEN VISIBILITY, METEOROLOGICAL PARAMETERS AND ATMOSPHERIC POLLUTION. *Proc. Soc. Anal. Chem., 8(3):44-45, March 1971. 1 ref. (Presented at the Society for Analytical Chemistry, Meeting, Nov. 4, 1970.)*

A sampling system capable of making meteorological observations at 10 min intervals and of taking chemical samples on an hourly basis was developed for a coastal area of England subject to the presence of sea fog and pollutants emitted by heavy and chemical industry. A nephelometer was used for visibility measurements and standard meteorological sensors for measurement of temperature, wet-bulb depression, wind speed and direction, rainfall, and solar radiation. Output from these sensors were fed to a data-logging system and the values punched on paper tape every 10 min. Atmospheric aerosols, sulfur dioxide, and ammonia were collected with automatic filter-tape samples and chemically analyzed by colorimetry. When the observations were classified by relative humidity, there was a very strong correlation between the reciprocal of the visibility and the ammonium ion concentration, the slope of the regression line being dependent on the relative humidity. Ammonium sulfate was also measured.

12277 APTIC NO. 29581

Engelhardt, Heinz

A GAS ANALYSER FOR THE MEASUREMENT OF IMPURITIES IN AIR. *Instr. Review, 15(194):98-99, Feb. 1968.*

The new Picoflux analyzer was developed to give high sensitivity, accuracy, selectivity, and speed for the analysis of gases such as sulfur dioxide, hydrogen sulfide, chlorine, nitrogen oxides, and carbon monoxide. The gas is measured electro-chemically by being brought into contact with a suitable electrolyte. A concentration of the impurity to be measured appears in the electrolyte and is proportional to the concentration in air. The conductivity of the solution is measured before and after the reaction by two conductivity cells and a potentiometer. The potential difference between two electrodes in an electric current which can be measured. The strength of the current is proportional to the impurity concentration. A precision thermostat maintains a constant temperature of 40 C. The lowest range required for SO2 is 0 to 0.3 parts 10,000,000; for hydrochloric acid, 0 to 0.5 parts/10,000,000; and for ammonia, 0 to 1 parts/10,000,000. The device is described in detail and several diagrams are included.

12278 APTIC NO. 29638

Fiala, Ernst and Ernst-Georg Zeschmann

EXHAUST GAS EVALUATION BY AIR RATIO COEFFICIENTS. *(Beurteilung des Abgases durch die Luftverhaeltniszahl). Text in German. Tech. Ueberwach. (Duesseldorf), 9(9):293-295, Sept. 1968. 3 refs.*

Determination of the carbon monoxide content in automobile exhaust gases as a measure of their pollutant power was compared with the indicative value of the air ratio coefficient lambda (the ratio of fuel and air consumed by the motor in a unit of time). The tests were performed on three internal combustion motors at three different stationary velocities and at different carburetor adjustments. Almost parallel curves resulted from the comparison, indicating that the lambda method is useful for exhaust gas control purposes. The air ratio coefficient is a measure of not only the CO content in the exhaust gas but of all factors contributing to incomplete combustion of the fuel. The application of the method under traffic conditions (by simultaneous measurement of fuel and air consumption) has confirmed its indicative validity in the assessment of exhaust gas pollution.

12279 APTIC NO. 29466

Fujita, Etsuo, Jo Murata, Toshiyuki Shono, and Koichiro Shinra

LUMINESCT SPECTROMETER ANALYSIS METHOD OF QUANTITATIVE ANALYSIS OF METALS IN DUST FLOATING IN ATMOSPHERE. *(Hakko bunko bunseki ho ni yoru taiki fuyu funjin chu no kinzoku no teiryo). Text in Japanese. Preprint, Japan Chemical Society, Tokyo, 1p., 1971. (Presented at the Japan Chemical Society Annual Meeting, 24th, Tokyo, March 1971, Paper 3345.)*

A method of luminescent spectroscopic analysis, is described in which a direct current arc light was used to keep the arc temperature high; vibrations were low to eliminate separate evaporation decreasing the matrix effect. In order to aid evaporation, ammonium perchlorate was used as a buffer. Dust was trapped on filter paper in a high volume sampler. With nitric acid and hydrochloride acid, the dust was heated and dissolved, and after drying, was heated in a platinum crucible to produce an oxidized powder. The powder was mixed with ammonium perchlorate, pulverized and filtered with 100 mesh. By using a carbon electrode with a direct current arc, the sample was made luminescent. The spectroscopic intensity of the metal was measured with a microphotometer. The amount of metals contained in the dust was quantitatively analyzed by checking with the spectrum of standard pigment. The spectrum intensity of each metal was highest when the sample was heated to 800 C for 20-30 minutes. Ammonium perchlorate had the best effect when 10 times the sample amount was added; the matrix effect decreased. Test results were consistent with the colorimetric method.

12280 APTIC NO. 29704

Gentilizza, Mirjana, Mirka Fugas, and Karlo Weber

APPLICATION OF FLUORIMETRY IN SMOKE MEASUREMENT. *Atmos. Environ., 5(2):103-109, Feb. 1971. 6 refs.*

A new method for smoke measurement is presented. The filter paper used for sampling is impregnated with a fluorescent dye, and the collected smoke causes a measurable decrease in fluorescence of the filter paper. The method was tested with airborne particulate samples and laboratory prepared white and black fumes and dusts, then compared with the reflectometric and densitometric methods using the gravimetric method as a reference. Like other optical methods, this method also depends on the physical properties of the particles, yet it has one essential advantage, it shows a linear relationship between fluorescence quenching and the weight concentration of the sample. Fluorescein sodium (0.01% solution) proved the most suitable substance for the impregnation of filter papers. (Author abstract)

12281 APTIC NO. 30113

Goodman, Gordon T. and T. M. Roberts

PLANTS AND SOILS AS INDICATORS OF METALS IN THE AIR. *Nature, 231(5301):287-292, June 4, 1971. 40 refs.*

A study was conducted in Swansea, Wales to obtain some relative estimates of the total aerial burden of metals presumed to originate indirectly from former industry and directly from present day urban-industrial sources. Sampling and analysis were conducted for zinc, lead, cadmium, copper, nickel, and magnesium in the moss Hypnum cupressiformi, the grass Festuca rubra, and in surface soils. Three transects, the Gower, Swansea, and Neath transects, were sampled along with the Gwendraeth Valley. The results show similar geographical trends for the metals examined. The concentrations of metal compounds increased in soils, Festuca, and Hypnum downwind of the Swansea urban industrial complex. The values in the two rural transects, Gower and Gwendraeth, contrasted sharply with the values of the Swansea transect. The results indicate that surface soils, Festuca, and Hypnum can be used as indicators and integrators of aerial metallic pollutants. Some applications of this method of sampling for agriculture and medicine are discussed.

12282 APTIC NO. 29660

Grob, K. and J. A. Voellmin

GC-MS ANALYSIS OF THE SEMI-VOLATILES OF CIGARETTE SMOKE. *J. Chromatog. Sci., 8(4):219-221, April 1970. 8 refs.*

An analysis of the semi-volatile components of cigarette smoke is discussed. Four microliters of smoke solution were injected on a capillary column, using the solvent bypassing technique without stream splitting. The semi-volatiles were slowly vaporized on a glass tube at 150 C into a 1 mm long inlet capillary held at room temperature. The inlet capillary was connected to the capillary column and analysis began. All separations were run on a full glass gas column chromatograph. Coupling the chromatograph with a mass spectrometer did not cause any significant loss of resolution. From the mass spectra it was found that most of the approximately 350 peaks were still composed of two or more substances. It is estimated that the actual number of semivolatile constituents is at least 1000. 0

12283 APTIC NO. 29874

Groenen, P. J. and L. J. Van Gemert

FLAME PHOTOMETRIC DETECTION OF VOLATILE SULPHUR COMPOUNDS IN SMOKE FROM VARIOUS TYPES OF CIGARETTES. *J. Chromatog., 57(2):239-246, May 6, 1971. 17 refs.*

A gas chromatograph with flame photometric detector was used to detect sulfur compounds in the vapor phase of cigarette smoke. Four measurements were carried out on flue-cured and sun-cured tobacco and three measurements on light air-cured tobacco. In contrast to the 13 sulfur compounds reported in the literature, at least 37 sulfur compounds were detected. A suggestion as to their possible identity is given for many of the compounds. A great similarity was observed in the chromatograms obtained for the three types of cigarettes; but there were alos some striking differences between air-cured tobacco on the one hand and flue-cured and sun-cured tobacco on the other. On the basis of the differences, a method might be developed for determining the amount of air-cured tobacco in an unknown tobacco blend. Smoking of air-cured tobacco is thought to be associated with a low risk of lung cancer. While nothing is known about the importance of sulfur compounds with respect to the health of a smoker, it is possible that they may have a protective effect against alkylating smoke constituents. (Author abstract modified)

12284 APTIC NO. 29651

Hales, Jeremy M., David A. Snyder, and J. Louis York

A METHOD FOR OBTAINING DILUTE MIXTURES OF GASES. *Am. Ind. Hyg. J., 32(5):299-303, May 1971. 8 refs.*

The packed-capillary dilution cell is a convenient, precise means of diluting test gases. It may be calibrated by taking measurements at two values of pressure drop and applying the theoretical calibration equation, which has been shown to be valid over a large range of cell output concentrations. The dilution cell is reasonably stable to perturbations in temperature and pressure drop. Its transient response is fast enough so that changes in output concentration can be made in a relatively short time. The cell can be used for all gases, regardless of whether or not they can be condensed easily. Once calibrated for a given gas pair, the packed-capillary dilution cell can be used for other gases, the original calibration curve being modified to account for gas properties in a simple and straightforward manner. (Author conclusions)

12285 APTIC NO. 29540

Hartogensis, F. and C. M. A. Creutz Lechleitner

RECORDING DEVICE COMBINED WITH THERMAL PRECIPITATOR FOR MEASURING DUST CONTENT IN AIR. *(Sur un appareil enregistreur combine au precipitateur thermique pour mesurer l empoussierage). Text in French. Lab. Central des Services Chimiques de L Etat, Paris (France) and Inst. National de Securite pour la Prevention des Accidents du Travail et des Maladies Professionnelles, Paris (France), Colloq. Securite Sociale Serv. Prevent., 3rd, Paris, France, 1955, p. 19-20. (Nov. 3-5.)*

In determining the dust content in air thermal precipitation, each reading represents the condition applying to one particular location at a given time only. Several readings are necessary to establish the average dust concentration in the air inhaled by a workman daily. The number of readings required can be reduced by using a portable set-up ahead of the thermal precipitator to indicate relative differences between consecutive conditions. The set-up is composed of a mercury lamp which illuminates the dust-carrying air space to be examined with a lense and diffusing screen. The diffused light falls on two photoelectric cells whose resistance will vary with the changes of intensity of light to suit the dust concentration. An alternating current amplifier with a power supply and an ammeter complete the set up. The readings of the ammeter can be transferred to a recording instrument. By leaving the apparatus at a given place for a number of days, any periodic or other changes will appear on the recording charts and the frequency and timing in the use of thermal precipitators can be decided upon accordingly. Any light reflections from walls must be eliminated by covering the walls with glass plates painted with coal black at the back.

12286 APTIC NO. 29464

Hasegawa, Toshio and Akiyoshi Sugimae

METAL COMPONENTS OF FLOATING DUST. *(Fuyu Funjin chu no kinzoku seibun). Text in Japanese. Preprint, Japan Chemical Society, Tokyo, 1p., 1971. (Presented at the Japan Chemical Society, Annual Meeting, 24th, Tokyo, 1971, Paper 3343.)*

Using a tape air sampler, dust was trapped hourly and lead and manganese were analyzed. Graphite electrodes were immersed in a silicone-carbon tetrachloride liquid and dried to be made waterproof. At the bottom of the electrodes, filter paper was attached and a 30 ppm indium solution was titrated and dried. A buffer powder was added. When the filter paper is treated with a direct arc discharge, there is an extreme background, since the filter paper burns. The spectrogram becomes weak and the metals may be scattered. Therefore, the filter paper was inserted at the bottom of electrodes, and on top of it, buffer powder added; the effect of the buffer on spectrogram intensity was examined. The buffer powders tested were graphite and NaCl, NaF, NaHCo3, Na2CO3. Graphite produced a large background which decreased when sodium was added. A buffer powder of graphite and NaSCO2 is concluded to be the best buffer.

12287 APTIC NO. 29862

Hasegawa, Toshio, Shigehiro Hirao, Kazuhiro Kuwata, and Akiko Tomimasu

DETERMINATION OF AROMATIC HYDROCARBONS EMITTED FROM THE DRY BATTERY PLANT. *(Kandenchi kojo kara haishutsu suru hokozoku tankasuiso no sokutei). Text in Japanese. Taiki Osen Kenkyu (J. Japan Soc. Air Pollution), 5(1):67, 1970. (Presented at the Japan Society of Air Pollution, Annual Meeting, 11th, Japan, 1970.)*

Aromatic hydrocarbons in the dust emitted from a dry battery plant stack, before and after a dust collector, were determined using gas chromatography and mass spectrometry. The samples were prepared extracting the dust with cyclohexane and nitromethane. The hydrocarbons were identified comparing the chromatograms of samples and standards. Twenty-five hydrocarbons were detected, including various naphthalene derivatives.

12288 APTIC NO. 29885

Hasegawa, Toshio, Akiyoshi Sugimae, Asao Inoue, and Junko Fujii

MEASUREMENTS OF AIRBORNE DUST. *(Fuyu-funjin no sokutei hoho nitsuite). Text in Japanese. Taiki Osen Kenkyu (J. Japan Soc. Air Pollution), 5(1):49, 1970. (Presented at the Japan Society of Air Pollution, Annual Meeting, 11th, Japan, 1970.)*

A comparison is presented of data from the commercially available atmospheric dust measuring equipments, including those from Meteorology Research Inc. and Bird and Tole Ltd. Dust sizes in terms median mass diameter are 2.28, 3.64, and 1.23 micron. Graphs are given in concentration figures of micrograms/cu m.

12289 APTIC NO. 29771

Hendrickson, E. R.

SIMPLIFIED TECHNIQUES IN AIR POLLUTION MEASUREMENT. *J. Sanit. Eng. Div. Proc. Am. Soc. Civil Engrs., p. 1776-1 to 1776-8, Sept. 1958. 15 refs. (Presented at the American Society of Civil Engineers, Industrial Health Conference, Atlantic City, N. J., April 1958, Paper 1776.)*

Air collection techniques for aerosols include filtration, electrostatic precipitation, thermal precipitation, or impingement; for gases and vapors, absorption, adsorption, or freeze-out are usually employed. The sample is then analyzed. Several recording instruments have been developed for common pollutants. However, practically all sampling programs are a compromise between what is desirable and what is economical or convenient. Simplified techniques generally cost less and result in cumulative indications The lead peroxide candle is a simple method for measuring sulfur dioxide. The rate of reaction varies inversely with the wind velocity. Increases in temperature and humidity also increased the reaction rate. Spanish moss and limed filter papers can determine fluoride content. Also, lead acetate impregnated papers or tiles can detect hydrogen sulfide. Another simplified technique is the use of rubber strips for the determination of ozone. The time of the rubbers cracking or crack depth can be used to indicate the amount of ozone exposure. An ozonometer is a more refined device.

12290 APTIC NO. 29737

Hermann, P.

EXPERIENCES WITH FLUORINE EMISSION MEASUREMENTS. *(Erfahrungen bei Fluro-Emissionsmessungen). Text in German. VDI (Ver. Deut. Ingr.) Ber., no. 164:101-107, 1971. 12 refs.*

Measurements of emissions of gaseous fluorine compounds made at som small and medium sized industrial plants within the last seven year showed results between 1 g F/hr and 1000 g F/hr. The analytical determination of small fluorine concentrations, be it by photometry or with the fluorine specific electrode, does not present any problem. No satisfactory method has as yet been found for separating particulate from gaseous compounds. Therefore, fine dust may have been included in the recorded results of the gaseous fluorine concentration. On the other hand, it may be assumed that reactions of hydrofluoric acid with alkaline dust substances change the true record of the original gaseous fluorine emission. The development of a useful method of separating the dust from the gaseous fluorine compounds appears to be very desirable. In presen arrangements for sample taking of fluorine bearing exhaust gases in industrial plants, the gases are often being tapped prior to entering a common chimney which serves to collect waste gases from several shops. The set-up for sample taking starts with a quartz tube which adjoins the gas exhaust pipe at right angles, and can be heated up to 400 C. The gas to be tested is then lead through a quartz wool filter, into absorption bottles made of quartz and containing a caustic soda solution. A gas circulating pump and a gas meter complete the set-up.

12291 APTIC NO. 29556

Hery, M.

OBSERVATIONS CONCERNING THE USE OF THE A.R.M. APPARATUS AND THE POSSIBILITIES OF UTILIZING THE RESULTS FOR PREVENTIVE MEASURES. *(Observations concernant l emploi de l appareil A.R.M. et la possibilite d utiliser les resultats pour la prevention). Text in French. Lab. Central des Services Chimiques de L Etat, Paris (France), and Inst. National de Securite pour la Prevention des Accidents du Travail et des Maladies Professionnelles, Paris (France), Colloq. Securite Sociale Serv. Prevent., 3rd, Paris, France, 1955, p. 77-81. (Nov. 3-5.)*

Disadvantages in the design of the A.R.M. sampling equipment and its use in coal mines include its weight and bulkiness and the time required to put it into operation. Whether it is actuated by electricity or compressed air, several operations of screwing, unscrewing, and pipe connecting are required. The fittings of the available compressed air supply rarely conform to those of the apparatus, and the connection to the electrical power supply is usually aggrevated by a long distance to the nearest available outlet. The air inlet on the apparatus is not designed for the air pressure of the compressed air supply in the mine. The filter boxes are inconveniently arranged; to change one filter, all filters have to be removed. Since the floor is full of dust, one has to hold in one s hands, at the same time, the box, two covers, the filter package, the old and the new filter, and the separating paper sheets, while in a crouched position. A division of the functions of sample taking, testing, and evaluation, and improvements in design, are suggested based on French requirements.

12292 APTIC NO. 30129

Holmes, A., A. Morgan, and F. J. Sandalls

DETERMINATION OF IRON, CHROMIUM, COBALT, NICKEL, AND SCANDIUM IN ASBESTOS BY NEUTRON ACTIVATION ANALYSIS. *Am. Ind. Hyg. Assoc. J., 32(5):281-286, May 1971. 12 refs.*

Iron, chromium, cobalt, nickel, and scandium were determined by neutron activation analysis in five standard reference samples of asbestos from different countries, in individual samples of Canadian chrysotile which were blended to produce the reference sample chrysotile B; and in a number of samples of crocidolite from both the North West Cape and Transvaal deposits in South Africa. High-resolution gamma-ray spectrometry was used to show that milling had not produced any significant changes in the composition of reference samples. The results of the trace determinations are given. In addition, results for the chromium, cobalt, and nickel content of the reference samples are compared with other measurements made on different types of asbestos from various regions. The comparison indicates that the standard reference samples are representative of their respective sources as far as trace metals are concerned. (Author abstract modified)

12293 APTIC NO. 29758

Hosaka, Naohiro and Hiroshige Arai

ON THE CONTINUOUS MEASUREMENT AND RECORDING OF OXIDANTS BY ELECTRIC CONDUCTIVITY METHOD. *(Denki-dendodohoshiki niyoru okishidanto venzoku-sokutei). Text in Japanese. Taiki Osen Kenkyu (J. Japan Soc. Air Pollution), 5(1):81, 1970. (Presented at the Japan Society of Air Pollution, Annual Meeting, 11th, Japan, 1970.)*

In a study of a continuous recorder for oxidants in the air, the reaction vessel had a glass rod with a pair of platinum wires on it and KI-buffer solution was run down from the top of the vessel whil the air sample was fed from the bottom to the top. Sulfur dioxide in the sample was removed with CrO3 filter. The electric conductivity between two Pt wires was measured continuously. The results were corrected by Ehmert method.

12294 APTIC NO. 29508

Hoshika, Yasuyuki

A FINDING CONCERNING A BASIC INVESTIGATION METHOD ON ODOR POLLUTION SEEN FROM ACTUAL EXPERIENCE. REPORT NO. 2 ON THE STUDIES OF OBNOXIOUS ODOR. *(Genbateki keiken kara mita akushu kogai kihon chosaho ni kansuru ichi kosatsu. Shuki no kenkyu dai 2 ho). Text in Japanese. Preprint, Japan Chemical Society, Tokyo, 1p., 1971. (Presented at the Japan Chemical Society, Annual Meeting, 24th, Tokyo, March 1971, Paper 3340.)*

Human perception of obnoxious odors is a composite phenomenon, caused by certain chemicals in a certain combination and concentration. A survey method for obnoxious odors is presented. The first step is a statistical classification of smell characteristics. The second stage is to confirm the odor-causing substance by chemical and instrumental analyses. In the third stage a similar mixture is made by using known substances. The type and intensity of each odor should be the same as the one expressed in the first stage. Examples of raw materials for the synthesis of various kinds of amino acids are noted and a gas chromatograph of an obnoxious odor from an amino acid synthesis plant is included.

12295 APTIC NO. 29907

Ishii, Takeshi and Soichiro Musha

GAS CHROMATOGRAPHIC ANALYSIS OF BENZENE AND TOLUENE IN AUTOMOBILE EXHAUST GAS.

(Jidosha haiki gasuchu no benzen oyobi toruen no gasu kuromato gurafu bunseki). Text in Japanese. Bunseki Kagaku (Japan Analyst (Tokyo)), 20(4):491-493, April 1971. 8 refs.

A sample was prepared by vaporizing benzene and toluene in a 27.5-l glass bottle with thin strips of aluminum foil. After several hours of diffusion, uniform samples of 1000 ppm were obtained. A gas chromatograph, at 84 C with helium as a carrier, and a flame ionization detector were used. The calibration curves for benzene and toluene showed a well-defined linear relationship. The gas chromatogram of exhaust from a muffler of an air-cooled 2-cylinder 2-cycle 360 m engine during idling showed distinct peaks for benzene and toluene. An air-cooled 4-cylinder 2-cycle gasoline engine of 55 m volume, a water-cooled 4-cylinder 2-cycle of 1200 cc, a water-cooled 4-cylinder 2-cycle of 1900 cc, and a water-cooled 6-cylinder 6-cycle of 3900 cc were also tested. The benzene content varied from 70 to 230 ppm, while the toluene content varied from 160 to 800 ppm. The air-cooled 2-cylinder 2-cycle gasoline engine of 360 cc volume had the maximum concentration of both pollutants because the engine used a mixture of gasoline and lubricating oil as fuel, a part of which was unburned when discharged. The method is rapid and simple; time required for analysis is about 15 min.

12296 APTIC NO. 29810

Isizaki, Masanori

STUDIES ON LEAD CHROMATE OBTAINED FROM TETRAALKYL LEAD IN LEADED GASOLINE. I. X-RAY DIFFRACTION TESTS OF THE LEAD CHROMATE CRYSTALS.

Mem. Def. Acad. Japan, 10(3):389-392, Dec. 1970. 3 refs.

Besides tetraethyl lead, recently some other lead alkyls, including tetramethyl lead, trimethyl-monoethyl lead, dimethyl-diethyl lead, and monomethyl-triethyl lead, have been used as antiknock agents for high octane motor gasolines. For analysis of these lead alkyls, they are converted to lead chromate, and the weight of the lead chromate is put into the formula: A equal to 12.79 G(1 plus 0.0012(t-15)), where A represents the content of metallic lead in gasoline at sampling, and 0.0012 the expansion coefficient of gasoline. The constant 12.79 was determined using the so-called empirical factor for converting lead chromate to metallic lead (0.6394). Crystal data of four kinds of lead chromate were checked by Debye-Sherrer s method. The lattice distance and the relative intensity of the crystals of lead chromates from three kinds of leaded gasoline, as well as a standard fused lead chromate, agree with each other.

12297 APTIC NO. 30114

Jordan, Siegfried and Francis T. Bonner

FRACTIONATION OF OXYGEN ISOTOPES BETWEEN NO AND H_2O.

J. Chem. Phys., 54(11):4963-4964, June 1, 1971. 10 refs.

Since it has been established that oxygen exchange between nitric oxide and water is catalyzed by nitrous acid, it is possbile to measure the isotopic enrichment factor alpha under conditions such that a gas phase consisting exclusively of NO and H_2O is brought to equilibrium with a highly dilute aqueous phase. This was done, employing 10 ml charges of thoroughly outgassed H_2O brought to equilibrium with NO at a partial pressure of about 150 torr, in a cell of total volum 150 ml. Reagents at initially normal isotopic abundance were employed. Samples of the nitric oxide gas phase were then dried by passage through a helical trap at dry-ice temperature and transferred to a discharge tube for decomposition to nitrogen and oxygen. Samples of the liquid phase were then prepared for isotopic analysis using rapid equilibrium with O_2 in an electrical discharge. The results of three separate measurements of alpha at 25 C are seen to be concordant within experimental error, and indicate a mean value of 1.025 plus or minus 0.003 for alpha.

12298 APTIC NO. 29483

Kanekawa, Akira

THEORETICAL CONSIDERATION IN THE MEASUREMENT OF SMOKE PARTICLES BY OWL (II) - EFFECT OF DISPERSION.

(Owl niyoru enmutai ryukei sokutei no rironteki kosatsu (II) - bunsando no eikyo ni tsuite). Text in Japanese. Preprint, Japan Society of Chemical Engineering, Tokyo, p. 339-341, 1971. 1 ref. (Presented at the Japan Society of Chemical Engineering Convention, Annual, 36th, Tokyo, Japan, April 2-5, 1971, Paper E306.)

Owl can measure particle diameter. Smoke particles distribute in a logarithmic normal distribution. The chromatic change observed in Owl is identified with the ratio of spectrum intensity (red/green). As reported in the preceding paper, chromatic change with diffraction angle is most obviously observed in the perpendicular component, so the discussion is restricted to it. The red/green ratio to diffraction angle is shown with the logarithmic geometrical standard deviation as a parameter in the case of 0.3, 0.4 and 2.0 micron geometrical mean diameters and a 1.60 refractive index. The peaked value of the ratio drops with the standard deviation increase and this tendency becomes obvious with the increase of the mean diameter. In a logarithmic normal distribution, the diameter distribution generally remains in the same form for any arbitrary geometrical mean diameter of particles, when the logarithmic value is used for magnitude of diameter. However, adoption of particle diameter as a variable brings forth a different distribution of particle diameter for different geometrical mean diameters of particles for a certain logarithmic geometrical standard deviation. The distribution shows the same pattern when the product of the geometrical mean diameter and the logarithmic geometrical standard deviation takes the same value. The product causes dispersional effects on chromatic change. The drop of the peaked value of the red/green ratio shows the same degree for the product, and the critical product value for the observable ratio was in the range of 0.05-0.1. The Owl has the ability to measure a comparatively large dispersion particle system and the effect of refractive index on the measuring ability of Owl is comparatively small.

12299 APTIC NO. 29966

Kawaguchi, Tameharu

AUTOMATIC MEASURING APPARATUS OF FLUORIDE GASSES IN AIR.

(Taiki chu no fusso-kagobutsu jidobunsekisochi ni tsuite). Text in Japanese. Taiki Osen Kenkyu (J. Japan Soc. Air Pollution), 5(1):85, 1970. (Presented at the Japan Society of Air Pollution, Annual Meeting, 11th, Japan, 1970.)

Zirconium oxychloride - eriochrome cyanine-R was used to form a complex; the fluoride concentration was detected by the color fading of the complex at 556 m micron by a photometer. For high fluoride concentration samples, iron-ferron reagent was used at 640 m micron. A specially designed cell, a high power amplifier, and an automatic cancellation mechanism enable the detection of 0.02 to 10 mg fluoride/cu m air.

12300 APTIC NO. 29953

Kemka, Rudolf

PARALLEL DETERMINATION OF NICKEL AND COBALT IN URINE AND ATMOSPHERE. *(Stanovenie niklu a kobaltu vedla seba v moci a v ovzdusi). Text in Czech. Pracovni Lekar. (Prague), 23(3):80-85, 1971. 12 refs. (Presented at 11 Ceskoslovenskom kongrese pracovneho lekarstva s medzinarodnou ucastou v Usti nad Labem, June 4, 1969.)*

A spectrophotometric method was used to determine the amount of nickel and cobalt with 4-(2-pyridylazo) resorcin (PAR) in urine and in the atmosphere. This method is based on the formation of chelates and cobalt with PAR, with the absorption maximum at 487 and 500 nm respectively. The nickel chelate is somewhat weaker than the cobalt chelate, and in the presence of fluorides and Na2EDTA, it decomposes within 10 min at 100 C, while the cobalt chelate does not change. Ten unexposed persons were tested; a mean of 0.027 micron g Ni/ml and 0.023 micron g Co/ml was found in urine. The exposed workers (who were employed at a nickel smelting plant) had maximum nickel values in urine of 0.240 micron g/ml and maximum cobalt values of 0.383 micron g/ml. The maximum mean values in the atmosphere were 0.349 micron g Ni/l air in nickel electrolysis and 0.477 micron g Co/l air in cobalt production.

12301 APTIC NO. 29381

Kitagawa, Tetsuzo

REPORT FOR THE INVESTIGATION ON THE METHOD OF SO2 TEST. *(SO2 no shiken hoho no kenkyu hokokusho). Text in Japanese. Japan Society for Safety Engineering, Tokyo, 117p., March 1970. 14 refs.*

Detective paper (purplish red) was used to determine the concentration of sulfur dioxide in the air. Calculations were made from the time of exposing detective paper to air and also from the degree of discoloration. The sulfuric acid mist concentration was estimated from the number of yellow spots appearing after the diffusion of the H2SO4 droplets into the fibers of detective paper. Using this method it became possible to separately estimate SO2 gas and H2SO4 mist. Using the method described above, the SO2 concentrations at Yokkaichi City, Kawasaki City, Yokohama City, and Chiba City were estimated. The results showed that pollution was by a special acid mist at Yokkaichi City and that the polluted zone moved from one area to another around the center of one fixed point because of wind direction. Therefore, the generation source of these acid mists was the waste gas from a sulfuric acid and a titanium oxide manufacturing factory which were situated in the southeast part of the city. In Yokkaichi City, many obliterative respiratory diseases were found which were not found in any other cities. As of July, 1969, 638 patients had such diseases. It is most probable that the H2SO4 mist in the waste gas of the titanium oxide manufacturing factory is the source of the bronchial asthma and bronchitis peculiar to this area.

12302 APTIC NO. 29467

Konno, Nobuya, Yasuko Morikawa, and Saburo Yanagisawa

EXAMINATION OF QUANTITATIVE ANALYSIS METHOD OF FLUORINE IN VEGETABLE SAMPLES. *(Shokubutsu shiryo chu no fusso teiryo ho no kento). Text in Japanese. Preprint, Japan Chemical Society, Tokyo, 1p., 1971. (Presented at the Japan Chemical Society, Annual Meeting, 24th, Tokyo, 1971, Paper 3341.)*

Experiments were conducted comparing fading methods, the zirconium eleaochromecianin R (Zr. ECR) method, the lantern alizarin complexion (La ALC) colorimetric method, and the potential difference measurement method, using fluoride ion electrodes for the quantitative analysis of vegetable samples. After pulverizing the sample, calcium oxide is added, heated to 600 C, ashed (4-5 hours), dissolved in sodium hydroxide and distilled from 50% sulfuric acid, at 145-150 C to obtain 600 ml in 3-4 hours. The Zr. ECR method utilizes the fluoride ion interference with the color change. It was found that 0-1 ppm fluorine could be analyzed. Interfering ions included sulfate, bisulfate, iron, aluminum, and biphosphate. The Zr. ECR method is very rapidly affected by temperature, so that reproducibility is difficult. The La-ALC method utilizes the fact that the fluoride ion forms a complex with La-ALC, and the color is measured. The complex of La-F-ALC was extracted with N-diethylanilineisoamylalcohol, and the degree of light absorption was measured. Major interference were those which form complexes with Al, and Fe. The relationship of the logarithm of the concentration to the potential difference are linear so that at very low concentrations, a curve is formed making quantitative analysis difficult. Using a fluoride ion electrode up to 0.002 ppm was analyzed. The electrode is sensitive to Al(2+) alone, but when F(-) exists together with Al(2+), there is a large error. Of the three methods, La-ALC was superior with respect to precision and sensitivity. The ion electrode method is easier to manipulate, and is sensitive. Therefore, using both methods, sufficient sensitivity and precision can be obtained.

12303 APTIC NO. 29762

Konosu, Hisao

TRIAL CONSTRUCTION OF NON-DISPERSION TYPE VISIBLE LIGHT GAS ANALYZE AND DETERMINATION OF NITROGEN DIOXIDE, CHLORINE, AND BROMINE. *(Hibunsangata kashigasu bunsekikei no shisaku to nisanka chisso, enso, shuso no teiryo). Text in Japanese. Bunseki Kiki (Analysis Instr.), 9(6):362-366, June 1971. 8 refs.*

A trial non-dispersive type visible light gas analyzer for process, quality, or safety control was built, and it was applied to the continuous measurement of a two-component inorganic gas mixture. The measurement principle was that the difference in relative absorption intensities between the sample gas and the reference gas was continuously recorded in the visible spectrum. Unlike conventional devices, the analyzer had no filter equipped with relatively long light path gas cells (50 cm) for high sensitivity. It was composed of a power supply for the light source (tungsten0 lamp), an optical system (single light source, double beam, and single detector), a power supply for the detector (photomultiplier) an amplifier and a recorder; it used the deflection method. The performance test showed that the span drift (plus or minus 2%/12 hr), the influences of ambient temperature (1% C), and the source voltage (plus or minus 2.5%/90-110V) were somewhat high. These were caused by the voltage drift of the power supply for the light source which changes light source intensity. Several densities of two-component gas mixture samples (determined by the condensation-gasification method) were prepared using nitrogen as a balance gas (reference gas: nitrogen). The impurities in nitrogen dioxide (nitrous oxide, nitric oxide, and nitrogen tetroxide) hardly influenced the measured values. It took two or three minutes from the 0, 100 adjustment to the measurement. Beer s law held in low densities (absorbance: 0-0.25), and for higher densities a regression quadratic curve was estimated. The limit of detection was 0.005 vol%, and the measuring range was 0-1 vol% for nitrogen dioxide. The influence of the interference gas was hardly considered because few gases absorb visible light. This method may be used to determine the analytical components in a many-component gas mixture.

12304 APTIC NO. 29512

Korn, M. and L. Rolf

PARTICLE SIZE MEASURING WITH THE TELEVISION MICROSCOPE QUANTIMET FOR SIZES MINUS 4 MICRONS. *(Korngroessenmessungen mit dem Fernsehmikroskop Quantimet im Bereich kleiner als 40 Mikron). Text in German. Aufbereitungs-Technik, 21(3):154-160, 1971. 29 refs.*

The Quantimet for measuring size distributions of fine particles consists essentially of a microscope, a TV camera with monitor, and an electronic computer. The microscope provides a picture of the sample. As this picture is scanned by the TV camera, electric pulses are produced whose height indicates the half tone and whose width the size. The accuracy and reproducibility of Quantiment measurements were tested in experiments with pure quarzite (99.9% SiO_2), pure limestone (98.5% $CaCO_3$), and lead sulfide (82.6% Pb) with grain sizes from 0 to 36 micron. The results were comparable to those for conventional methods. The rapid and exact measurement of grain sizes from 1 micron on, makes the method suitable for control measurements in metallography and medicine.

12305 APTIC NO. 29801

Kovalenko, N. P.

METHODS OF DETERMINING SULFUR DIOXIDE (REVIEW). *Ind. Lab. (USSR) (English translation from Russian of: Zavodsk. Lab.), 36(11): 1680-1684, Nov. 1970. 84 refs.*

Iodometric, redox, photometric, and other methods of determining sulfur dioxide in air or waste gases, including smokes, are briefly summarized. The accuracy, range, and speed of analysis of many of the methods are noted. Also described are available instruments for the automatic or continuous determination of SO_2.

12306 APTIC NO. 29652

Krause, Leonard A., Richard Henderson, Henry P. Shotwell, and Dale A. Culp

THE ANALYSIS OF MERCURY IN URINE, BLOOD, WATER, AND AIR. *Am. Ind. Hyg. Assoc. J., 35(5):331-337, May 1971. 7 refs.*

A procedure for the analysis of mercury in air, water, urine, and blood is described. It is dependent on the rapid release of mercury from digested specimens by using stannous chloride. The apparatus consists of an all-glass reaction vessel with a receiving funnel insert, connected to a water scrubber by means of a three-way stopcock. From the scrubber, glass fittings attach to an optical cell. A No. 1 Whatman filter is inserted at one point to remove possible droplets of moisture, while aspiration is through coarse frits positioned to fit near the bottom of the flasks. All glass joints are ball-and-socket held by appropriate pinch clamps. A flow meter calibrated for rates between 1 and 4 liters/min is inserted downstream of the optical cell and before the vacuum pump. The Beckman Model K-23 double-scale mercury vapor test meter used in these experiments was altered by removing the grille, and mounting and positioning an all-glass optical cell 22.5 cm in length by 4 cm in diameter (fitted with inlet and outlet ports) and with quartz glass windows fused into the ends. Reagents and preparation of the standard curve are discussed. Concentrations of mercury below one part per billion can be detected accurately by increasing the aliquot of the sample.

12307 APTIC NO. 29487

Kupel, R. E., M. M. Braverman, J. M. Bryant, A. Carotti, H. M. Donaldson, L. Dubois, and E. C. Tabor

TENTATIVE METHOD OF ANALYSIS FOR BERYLLIUM CONTENT OF ATMOSPHERIC PARTICULATE MATTER. *Health Lab. Sci., 8(2):101-106, April 1971. 8 refs.*

An analytical method is described which involves measuring the fluorescence of an aqueous beryllium solution with ultraviolet light in the presence of morin. The method is practically specific for beryllium, although zinc may interfere slightly. Theoretically, a minimum concentration of 0.00002 micrograms/cu m could be detected if a 20 cu m sample of air particulates is taken for analysis. The beryllium content of ambient air has been found to range from undetectable to as high as 0.01 micrograms/cu m. The apparatus, reagents, and procedure are described. Low temperature ashing of the sample, muffle furnace ashing, and extraction of the ashed sample are discussed.

12308 APTIC NO. 29480

Kuroda, Daisuke

QUANTITATIVE ANALYSIS OF NO IN ATMOSPHERE - ON CHANGES IN SALTZMAN COEFFICIENT WITH CHANGE IN COMPOSITION OF SALTZMAN REAGENTS. *(Zarutsuman shiyaku no sosei ni yoru Zarutsuman keisu no hendo ni tsuite). Text in Japanese. Preprint, Japan Chemical Society, Tokyo, 1p., 1971. (Presented at the Japan Chemical Society, Annual Meeting, 24th, Tokyo, March 1971, Paper 3336.)*

The relationship between the mixed reagents of Saltzman type and the Saltzman coefficient was measured. To sulfanilic acid 5 g/l, N-1-naphthylethylenediaminedihydrochloride (NEDA), 50 mg/l and n-butylalcohol 10 ml/l solution, (a) were added acetate 50 ml/l, (b citric acid 15 g/l, (c) tartaric acid 15 g/l, and (d) sulfuric acid 0.07 ml/l respectively, and mixed reagents were prepared. To each of 7 ml of (a)-(d), 10 ng nitrogen dioxide/10 min was absorbed, and the Saltzman coefficient was measured: (a) equals 0.91, (b) equals 0.87, (c) equals 0.90 and (d) equals 0.82. These figures varied with the concentration of NEDA, concentration of acids, velocity of air, and temperature. The NEDA concentration had the greatest effect. For instance, when NEDA concentration was 140 mg/l, in reagent (d), the Saltzman coefficient was 0.63. While the diazotation reagent was removed from reagents (a)-(d) and NO_2 was added, there was a reaction with NEDA. The reaction was a rapid one; three minutes after the addition of NO_2, 90% of the NO_2 was consumed and five minutes after, 99%. When this reaction took place while air was let in, a samll quantity of NO_2 and a great quantity of NO were emitted. The emission rate of NO to NO_2 was: (a) equals 75%, (b) equals 76%, (c) equals 68%, (d) equals 93%. There was no NO_2 present in the solution after the air was let through, and it looked slightly yellowish. Six ml of (a)-(d) reagents were taken into a bubbler with glass filter, and while air was let through 10 mg of NO_2 was poured in. The generation rate of NO was: (a) equals 4%, (b) equals 8%, (c) equals 7%, (d) equals 17%. The rate of coloring of NO2 without air was: (a) equals 94%, (b) equals 92%, (c) equals 93%, and (d) equals 83%, and the loss was (a) equals 4%, (b) equals 8%, (c) equals 7% and (17%), corresponding fully with the generation rate of NO. The coloring rate of NO2 corresponds to the Saltzman coefficient measured at first. The Saltzman coefficient is slightly lower because the absorption of NO2 and addition of NO2 are not carried out under identical conditions, so that there is a difference in the rate of reaction of NEDA-NO2. A formula is obtained showing the concentration of NO2 is proportional to the degree of light absorption while letting the air through. Therefore, if a spectrum is made, using the figure measured by letting the air through a standard NO2 solution, under the same conditions as when gas was sampled, the gas concentration can be obtained directly. The Saltzman coefficient varies as the NEDA-NO2 reaction degree varies, with the different components of reagents and condition of sampling the gas. If measurement is made as above, the Saltzman coefficient can always be regarded as 1.

12309 APTIC NO. 30014

Leithe, Wolfgang

DETERMINATION AND EVALUATION OF LOW CONCENTRATIONS OF INDUSTRIAL AIR POLLUTANTS. *(Zur Bestimmung und Bewertung niedriger Konzentrationen industrieller Luftverunreinigungen). Text in German. Chemiker. Z. (Heidelberg), 95(10):452-455, 1971. 17 refs.*

Common methods for the determination of small concentrations of sulfur dioxide, fluorides, oxides of nitrogen, and odorous substances are discussed. For SO2 the highly selective and sensitive West and Gaeke colorimetric method, employing rosaniline, is used. Fluorides are also determined by colorimetry, using alicarine-complexone and lanthane nitrate. Recently, fluoride-selective electrodes have also been used. For the analysis of NO2 and NO, sensitive methods are available which uses azo dyes. More recently the so-called Saltzman-reagent, N-(1-naphthyl)-ethylene diamine and sulfanilic acid, has been preferred. Gas chromatography is used to determine odorous substances. The sensitivity of this method could be greatly increased by the recently developed technique of reversion gas chromatography. The substances to be analyzed are concentrated in a tube which is filled with a suitable adsorption agent. The beginning and the end of the tube filling can be cooled and a heating sleeve can be moved across the entire tube. The method operates periodically and a complete chromatogram is obtained every 15 min. In the first period, the air sample is passed through the tube with the two cold zones in action. In the second period, the heating sleeve is moved across the tube at a speed which is below the sampling speed.

12310 APTIC NO. 29766

Lelievre, Gerard

STUDY OF TRACES OF HEAVY ORGANIC PRODUCTS IN FUEL COMBUSTION GASES. (Etude des traces de produits organiques lourds dans les fumees de combustion de fuel). Text in French. Rev. Gen. Thermique (Paris), 10(111):223-238, March 1971. 90 refs.

Organic products of intermediary molecular weight (up to C-20) contained in soot were analyzed by I. R. and U. V. absorption spectrophotometry, by chromatography in liquid phase, by gas chromatography, by mass spectrometry and by spectrofluorimetry and the compounds identified were determined quantitatively. The organic compounds were extracted from soot from a known quantity of combustion gases by extraction with benzene, ethyl acetate, chloroform and sulfur ether in an alkaline medium. A total of 42 different compounds were identified. The relative amounts of the various compounds present in the soot were determined colorimetrically with an accuracy of plus or minus 40%. The unburn products amounted to, at most, 0.15% of the caloric value of the fuel under conditions prevailing at the thermal power plant of Saint-Ouen where the study was made. For small industrial furnaces this loss should be multiplied by 10, for furnaces used for domesti heating the loss can be up to 30-fold. Even though the share of unburnt products was found to be small, it still represented a daily emission of 1700 kg fuel into the atmosphere within 24 hours in the case of the plant under scrutiny. While the study was not oriented towards detecting cancerogenic substances, the presence in the soot of beta-naphtylamine was confirmed.

12311 APTIC NO. 29270

Lippmann, Morton

REVIEW OF CASCADE IMPACTORS FOR PARTICLE SIZE ANALYSIS AND A NEW CALIBRATION FOR THE CASELLA CASCADE IMPACTOR. *J. Am. Ind. Hyg. Assoc., vol. 20:406-416, Oct. 1959. 19 refs. (Presented at the American Industrial Hygiene Association, Annual Meeting, 20th, Chicago, Ill., April 25-May 1, 1959.)*

A new calibration for the Casella cascade impactor, based on optical sizing of the impaction stages, is presented. The results obtained with this calibration were found to check very closely with the results obtained from equivalent and simultaneous membrane filter samples. With the new calibration, a Casella cascade impactor, modified to prevent air leakage and to include a filter paper stage, should be capable of providing a reasonably accurate estimate of particle size distribution in aerosols in the usual industrial atmosphere. (Author conclusions modified)

12312 APTIC NO. 29056

Low, M. J. D. and Stanley F. Freeman

INFRARED FOURIER TRANSFORM SPECTROSCOPY IN FLAVOR ANALYSIS III. *Agr. Food Chem., 18(4):600-606, July-Aug. 1970. 15 refs.*

A description is presented of a completely automated infrared Fourier Transform spectrometer incorporating a minicomputer. The latter is used not only for the data acquisition, storage, and data reduction procedures required for Fourier Transform spectrosopy, but also controls the entire instrument. The operator has access to the instrument only via teletype and, as the computer monitors instrument performance and maximizes all instrument parameters, high-quality spectra are obtainable routinely by unskilled operators. The instrument is laser controlled, leading to a wavelength accuracy of 0.1 reciprocal cm. Spectral resolutions of 0.5, 1, 2, or 4 reciprocal cm are obtainable at repetitive scan times of (nominally) 8, 4, 2, and 1 sec, respectively. The resolution is better than that obtained by high-quality dispersion spectrometers operated in routine fashion. The instrument was applied to the analysis of flavor materials. Examples are given of the measured infrared spectra of pure compounds (e.g., 2,5-dimethylthiophene, ethyl octanoate, nicotine, longifolene, vanillin) and a series of commercial orange oils. Minor spectral variations among the orange oils became clearly observable by precise ordinate scale expansion, indicating that the interferometric approach will prove useful in quality control procedures.

12313 *APTIC NO. 29476*

Low, Manfred J. D.

FOURIER TRANSFORM SPECTROMETERS. J. Chem. Educ., 47(3r6), ;5p., 1970. 3 refs.

In contrast to the conventional spectrometer, the Fourier Transform spectrometer does not contain a monochromator or dispersing element. The optical system of the Fourier Transform spectrometer transforms the polychromatic signal in its entirety, so that it may be analyzed for frequency-intensity content without dispersion. This method is based on the fact that the signal (termed interferogram) produced by the detector of a two beam interferometer and the spectral distribution of the radiation entering the interferometer are Fourier cosine Transforms. Resolution, data reduction, and multiple scanning are discussed. The Fourier Transform spectrometer possesses significant advantages in terms of signal-to-noise ratio with respect to conventional dispersion instruments, based on the amount of signal which can be processed, and the time used to process it. The various commercially available instruments are discussed in detail.

12314 APTIC NO. 29642

Luna, R. E. and H. W. Church

ESTIMATION OF VARIANCE OF AIR SAMPLER DATA BASED ON REPLICATE SAMPLES. *Inst. of Environmental Sciences, Mt. Prospect, Ill., Proceedings of the Institute of Environmental Sciences Annual Technical Meeting, 17th, Los Angeles, Calif., 1971, p. 346-352. 7 refs. (April 26-30.)*

An analysis is presented of air sampler measurements made at nearly identical locations during a field diffusion experiment called Roller Coaster. Roller Coaster was a joint undertaking of the United States and the United Kingdom to investigate the mechanisms of dispersal, transport, and deposit of the radioactive elements from a nuclear weapon when the high explosive in the weapon is detonated accidently. In the process of analyzing the air sampler measurements it became apparent that a large difference in measurements existed between samplers at adjacent stations and between samplers at the same station. This difference between the time integrated concentration measured by an air sampler and what actually existed at a point, termed the variability, may be considered to consist of a part resulting from random errors in obtaining a representative sampler and in assaying the quantity of particles captured, and a part, random or systematic, resulting from non-ideal operation or improper handling of the samplers after exposure but before assay. In an attempt to quantify the variability, the set of data from stations for which two or more air samplers were deployed was selected from the complete set of air sample data and analyzed.

12315 APTIC NO. 30029

Malan, E. and B. Brink

SPECIAL COLUMN CONFIGURATION FOR THE ANALYSIS OF SOME INORGANIC GASES AND LIGHT HYDROCARBONS. *Chromatog., no. 4:178-179, 1971. 4 refs.*

A novel configuration of gas chromatograph columns and sampling and switching valves was developed to enable analysis of inorganic gases and light hydrocarbons in refinery samples within 16 min. The arrangement uses three stainless steel columns packed, respectively, with DC-200, dibutyl maleate, and porapak Q. Reproducibility and sensitivity of the system are good and no baseline shifts or pressure peaks occur, which makes the configuration suitable for computer link-up. The elution order of sample components is noted as are variations in component concentration.

12316 APTIC NO. 29595

Manita, M. D.

NEW METHODS OF DETERMINING AIR POLLUTION. *(Neue Methoden der Bestimmung von Luftverunreinigungen). Text in German. Wiss. Z. Humboldt Univ. Berlin Math. Naturw. Reihe, 19(5):527-528, 1970.*

A number of new and improved methods of quantitative determination of atmospheric pollutants are described. Most prominent among them are photometric methods. For example, a method for the determination of polycyclic aromatic hydrocarbons (e.g., benzpyrene in dust involves evaluation of the fine structure of fluorescence spectra, based on the Shpolski effect. The essence of this effect is the phenomenon in which the spectra of the polycyclic hydrocarbons show increased clarity of individual lines when hydrocarbons dissolved in n-hexane, n-heptane and n-octane are being frozen. Photometric methods of light absorption of pigmented test solutions are being employed for determination of both aerosols and gases. The use of filters for aerosol tests, silica gel for gases and vapors, and water-soluble chemical absorbents for trapping gases and vapors are also discussed. Spectrometric and chromatographic methods for studying the composition of automobile exhaust gases, using equipment with flame ionization detectors, are mentioned briefly.

12317 APTIC NO. 30023

Masek, Vaclav

QUANTITATIVE ALDEHYDE DETERMINATION IN THE AIR OF WORKING PLACES. *(Quantitative Aldehyd-Bestimmungen in der Luft der Arbeitsplaetze). Text in German. Abl. Arbeitsmed., 21(5): 144-149, 1971. 30 refs.*

The main sources of aldehydes in the atmosphere are incomplete combustion processes. The following quantities of aldehyde are emitted from 1 Gcal of fuel: natural gas, 9 to 36 g; petroleum, 3 to 52 g; and hard coal, 18 to 684 mg. Diesel engines produce 1.8 to 6.8 ml/cu m; four-stroke engines, 1.2 to 10.9 ml/cu m; and jet engines, 2 to 5 ml/cu m. The Schiff method is the oldest for aldehyde measurement, it is not specific because the presence of acrolein interferes with the determination. Calorimetric measurement of formaldehyde with phenylhydracine and potassium hexacyanoferrate in hydrochloric acid solution has an accuracy of plus or minus 5% by weight. Homologous aldehydes do not interfere. A modified version of this method, used in the USSR, determines the formaldehyde in air mixtures with at least a fivefold surplus of phenol and ammonia. Chromotropic acid is frequently used for formaldehyde determination; however, some sulfur and nitro compounds interfere with the determination. The best method for determining formaldehyde is that of Lahmann and Jander, based on air absorption in 1% NaHSO3.

12318 APTIC NO. 29670

Maslovsky, R. Ya.

AN ASPIRATION INSTALLATION OF HIGH EFFICIENCY FOR COLLECTING SAMPLES OF RADIOACTIVE AEROSOLS FROM THE ATMOSPHERE. *(Aspiratsionnaya ustanovka vysokoy proizvoditel nosti dlya otbora prob radioaktivnykh aerozoley iz atmosfernogo vozdukha). Text in Russian. Gigiena i Sanit., 36(2):63-64, 1971. 2 refs.*

A powerful aspirator for collecting samples of radioactive aerosols from the atmosphere is described. In its construction, a ventilator, SD 4, driven by a motor of 2-5 HP and provided by filter FPP-15 were used. The whole setup was installed on a truck-trailer. In the aspirator described, the velocity of air filtration through 1 square cm of FPP-15 filter is 5 l/min. From experimental studies, it follows that at this suction velocity, passage of aerosols through FPP-15 fiber does not exceed 8-10%. Installation of the aspirator is easy. The aspirator is highly reliable; it enables large scale studies, and results of analysis carried on it have lower error.

12319 APTIC NO. 29965

Matushita, Hidetsuru, Y. Esumi, and Takashi Handa

A SHORT TERM DETERMINATION OF BENZO(A)PYRENE AND BENZO(K) FLUORANTHENE IN AIR POLLUTANTS. *(Osenbutsu chuno benzo(a)pyrene to benzo(k)fluoranthene no kan i teiryoho). Text in Japanese. Taiki Osen Kenkyu (J. Japan Soc. Air Pollution), 5(1):77, 1970. (Presented at the Japan Society of Air Pollution, Annual Meeting, 11th, Japan, 1970.)*

The dust in an air sample was collected on a glass fiber filter of a high volume air sampler and sublimed at 0.01 mm Hg and 300 C. Sublimed benzo(a)pyrene and benzo(k)fluoranthene were extracted with cyclohexane and determined with a fluorimeter at 403.5 m micron and 402.5 m micron respectively. The results agreed with those from thin layer chromatography-fluorimetry.

12320 APTIC NO. 29676

Mitsusawa, Toshiaki

OXIDATION OF NITROGEN MONOXIDE. *(Sanka chisso no sanka ni tsuite). Text in Japanese. Preprint, Japan Society of Analytical Chemistry, Tokyo, 3p., 1971. (Presented at the Nitrogen oxides Conference, 3rd, Tokyo, Japan, Jan. 22, 1971.)*

The oxidation of nitric oxide is especially required for a colorimetry analysis of nitrogen oxides by the Saltzman method. The oxidation methods include liquid oxidizing agents, solid oxidizing agents, gas oxidizing agents, and ultraviolet oxidizing. The oxidizing coefficient is determined as the ratio of NO concentration oxidized by a certain oxidizing agent to that of a 2.5% potassium permanganate and sulfuric acid solution. Potassium permanganate sulfuric acid, potassium permanganate phosphoric acid, hydrogen peroxide sulfuric acid, and potassium dichromate sulfuric acid solutions are used as liquid oxidizing agents; 2.5% potassium permanganate sulfuric acid solution is the most widely used. The relationship between the oxidizing rate and 2.5% potassium permanganate sulfuric acid solution depth is discussed. When the oxidizing coefficient was assumed 1 for a 5 mm diameter nozzle opening and a 10 cm depth of liquid, the gas flow condition was 1-3 ppm of NO by 300 ml/min, and the oxidizing coefficient was about 0.9 for 5 cm and 15 cm of depth. Potassium permanganate, chromium trioxide, sodium dichromate, or potassium dichromate were disolved into the sulfuric acid to be coated or were permeated through a glass-fiber cloth as the solid oxidizing agent. Several halide or halogen oxides, potassium permanganate crystal, and chromium trioxide crystal were also used for this. A sheet of glass fiber cloth (4 by 5 cm) was dried in a vacuum heater (1.5 hours, 60-70 C) and tested for the oxidizing coefficient (1-3 ppm of NO, 200 ml/min, and 17 C). The oxidizing coefficient was 1.20-1.37. The oxidizing coefficient of a powder oxidizing agent was: potassium permanganate-0.47, chromium trioxide-0.25, cerium sulfate-0.84, and potassium dichromate-0.15 (less than 100 mesh) for 3-5 ppm of NO, 400 ml/min, and 20 C. In high humidity of about 80%, the oxidizing coefficient of the powder agent was 1.03, 0.81, 0.16, and 0.0 respectively.

12321 APTIC NO. 29564

Montet, M.

GENERAL REMARKS ABOUT DUST SAMPLING. *(Remarques generales sur les prelevements de poussieres). Text in French. Lab. Central des Services Chimiques de L Etat, Paris (France) and Inst. National de Securite pour la Prevention des Accidents du Travail et des Maladies Professionnelles, Paris (France), Colloq. Securite Sociale Serv. Prevent., 3rd, Paris, France, 1955, p. 117-118. (Nov. 3-5.)*

The types of apparatus used for sampling dusty air are the impinger, the thermal precipitator, the conimeter, and the A.R.M.; the latter is used as standard equipment in France. Its relatively large size and heavy weight makes it cumbersome where frequent location changes and longer tests run are involved. The need for an external source of energy frequently impedes its use. A source of error is the operator's inability to know when the dust accumulation on the filter reaches the saturation point, beyond which dust overflows to the next filter in the filter box. Clogging of the filter causes a variation of the air pressure at the air inlet valve; this could be utilized to effect closing of the valve when the point of saturation is reached, by means of an automatic pressure controlled device. A change in filter design and size should be investigated to decrease the risk of losing dust from the filter. Methods for preventing or impeding the passage of dust sediment into the air, such as water spraying, and means of eliminating of suspended dust such as evacuation and filtration, electrostatic precipitation, deflector screens, and ventilation are described.

12322 APTIC NO. 29738

Moser, E.

MEASUREMENT OF GASEOUS AND PARTICULATE FLUORINE EMISSIONS. *(Messung von gas- und staubfoermigen Fluor-Emissionen). Text in German. VDI (Ver. Deut. Ingr.) Ber., no. 164:91-99, 1971.*

The emission from manufacturing plants which produce or process fluorine bearing products usually comprises a gaseous part and a particulate part. The gaseous part contains predominantly hydrofluoric acid, whereas the fluorine compounds in the dust may be composed of sodium fluoride, aluminum fluoride, cryolite, sodium silicofluoride, and calcium fluoride. With regard to the gaseous components, for instance in the case of an electrolytic aluminum smelting plant, where the emission of pollutants rises drastically at the time of metal pouring, charging of raw materials, and changing of electrodes, it is necessary to extend the sample taking at least over one complete cycle. For determination of peak concentrations, short time sampling is advised. In a plant with installed air purification, the air has to be sampled at points of entry and of exit of the purification system. An automatically working system of sample taking is described. The apparatus is divided into two groups, one of which is mounted directly next to the measuring point and comprises the filtering apparatus and gas absorption bottles, including a drip separator and a heater for the filters. The second group, connected by a hose line to the first, and conveniently located on the floor, comprises the pump arrangement with velves, thermometer, flow meter, and other necessary instruments. Tubular filters are lately being preferred to flat ones, due to their larger surface and better adaptability to the mounting of electric heaters. Absorption of gaseous HF in the bottles is best effected by a caustic soda solution.

12323 APTIC NO. 30103

Moukalenko, N. I. and S. O. Mirumyants

CALCULATION METHODS OF SPECTRAL ABSORPTION OF INFRARED RADIATION BY ATMOSPHERIC GASES. *Bull. Acad. Sci. USSR, Phys. Atmos. Oceans (English translation from Russian of: Izv. Akad. Ncuk SSSR, Fiz Atmosfery i Okeana), 6(11):665-675, 1970. 73 refs.*

The accuracy of different methods of calculating spectra absorption of infrared radiation by atmospheric gases is analyzed. The methods examined are digital integration, model representation, and empirical methods. The calculated spectra are compared with experimental data obtained both under laboratory and natural conditions. It is concluded that empirical methods are the most suitable for calculating the transparency of the Earth s atmosphere in the 0.8 to 40 micron spectral region, where the required accuracy of the spectral transmission does not exceed five to seven percent. Moreover, these methods make it possible to assess the effect of temperature on the transmission function. However, if a higher degree of accuracy is required, it is necessary to use the digital integration method. Empirical methods were more accurate than digital integration for carbon dioxide. Spectral transmissions are most reliable for nitrous oxide, carbon monoxide, methane, nitric oxide, and ozone absorption bands. (Author abstract modified)

12324 APTIC NO. 29858

Mueller, Peter K., Evaldo L. Kothny, Louis B. Pierce,
Theodore Belsky, Miles Imada, and Hezekiah Moore

AIR POLLUTION. *Anal. Chem., 43(5):1R-15R, April 1971. 557 refs.*

A literature review is presented of analytical activities concerning air pollution in the years 1969 and 1970. Sampling and physical properties, inorganic composition, and organic composition are discussed for suspended particulate matter. Determination methods are considered for inorganic and organic gases, as well as automated analyses; the effort is devoted mainly to sulfur and to carbon compounds. The analytical chemistry for measuring odorous pollutants does not yet provide the sensitivity of the organoleptic measurements, especially for short-term sampling. Methods of measuring biospecimens are also indicated.

12325 APTIC NO. 29913

Mulik, J. D. R. K. Stevens, and R. Baumgardner

AUTOMATED ANALYSIS SYSTEMS MAKES KRAFT EMISSION MEASUREMENTS EASY. *Paper Trade J., 155(16):46, April 19, 1971. (Presented at the American Chemical Society Meeting, 157th, Minneapolis, Minn., April 1969.)*

Gas-chromatographic-flame photometric analyzers were developed to measure both low-molecular weight and heavier sulfur compounds in air emissions from kraft mills. The analyzer for the lighter compounds has a 10-part sliding valve equipped with a 10-cc Teflon sample loop, a 2-ft stripping column, and a 36-ft analytical column. Both columns are Teflon tubes packed with mesh Teflon and coated with polyphenyl ether and orthophosphoric acid. Automatic actuation of the valve at 10-min intervals is done with solenoids and a cam timer. Hydrogen sulfide, sulfur dioxide, methyl mercaptan, ethyl mercaptan, dimethyl sulfide, and propyl mercaptan are resolved in 10 min by the analytical column. A total sulfur analyzer incorporates a 6-port sampling valve. The analytical colum is a 10-ft Teflon tube packed with mesh Teflon and coated with Triton-X 305. The lighter sulfur compounds emerge rapidly from this column, followed by heavy sulfur compounds that elute separately. The second analyzer was used to measure emissions at a kraft mill employing the strong black liquor oxidation process and at another mill employing the weak oxidation process. At both plants, sulfur dioxide and hydrogen sulfide were found to be the major pollutants emitted.

12326 APTIC NO. 29938

Nagai, Hisaaki and Hideo Uchiki

GAS CHROMATOGRAPHIC ANALYSIS OF TRACES OF CO AND CO2. *(Biryo issankatanso, tansangasu no bunseki). Text in Japanese. Hitachi Hyoron, 53(5):69-72, May 1971. 4 refs.*

A rapid method for the analysis of traces of carbon monoxide and carbon dioxide existing in the atmosphere was developed. The gas chromatographic high-sensitivity flame ionization detector (FID) is not sensitive to inorganic substances like CO and CO2. However, when reduced to methane, CO can be detected by the FID as reported by Porter and others. Using this reduction method, gas chromatographic analysis was employed to detect CO and CO2 of less than 1 ppm. Reduced nickel catalyst was used to reduce CO and CO2 with hydrogen to methane at a reaction temperature of 310 C, thus making them detectable by the FID. The gas chromatograph used was Hitachi 063 Model comprising the main thermostatic tank and another smaller thermostatic tank for the detector; the smaller tank can be readily used as a reduction reaction tank for this analysis. Results showed that even a few ppb of CO in the atmosphere can be measured by this method. Carbon dioxide can be detected equally as well. Analysis time is about 3 minutes. The calibration curve showed good linearity; reproducibility is also good. Moreover, a larger quantity of CO or CO2 did not cause either drastic deterioration of the reduced nickel or poor linearity and reproducibility. The catalyst did not show any sign of deterioration with continuous use.

12327 APTIC NO. 29552

Nagelschmidt, G.

RESULTS OF COMPARATIVE TESTS ON QUARTZ CONTENT OBTAINED FROM LABORATORIES USING VARIOUS TECHNIQUES OF DETERMINATION. *(Les resultats d essais comparatifs interlaboratoires pour le dosage du quartz par differentes techniques). Text in French. Lab. Central des Services Chimiques de L Etat, Paris (France) and Inst. National de Securite pour la Prevention des Accidents du Travail et des Maladies Professionnelles, Paris (France), Colloq. Securite Sociale Serv. Prevent., 3rd, Paris, France, 1955, p. 55-58. (Nov. 3-5.)*

A series of dust samples of known composition were distributed among laboratories in several countries to determine the effectiveness of four different methods of analysis. The samples were quartz, kaolin, and mica as well as binary and ternary mixtures of these. All samples were composed of particles of respirable sizes. The types of analysis used were the Shaw-Skinner method with sulfuric acid; the phosphoric acid method which can be employed in several variations, one of which is a micro-method using only 50 g of test material; x-ray diffraction, and thermal differential analysis. The average results obtained by sulfuric acid analysis and by X-ray diffraction came within less than four percent of the known figure. The average results from phosphoric acid analysis deviated by about 8%; those obtained by thermal differential analysis showed considerably more divergence. The chemical methods of analysis are lowest in cost and are recommended where two to ten analyses per week are required. The X-ray method is the fastest and is appropriate for conditions demanding a far greater performance, such as 20 to 30 analyses per day.

12328 APTIC NO. 29770

Nishimura, Kunio and Tohru Hirayama

INVESTIGATION OF ACTIVATION ANALYSIS OF TRACE MERCURY IN GAS BY RADIOISOTOPE TRACER METHOD. *Text in Japanese. Radioisotopes, 17(12):24-30, Dec. 1968. 12 refs.*

Most chemical determination methods for mercury in gas consist of the collection of mercury from a large volume of gas followed by an estimation of the amount collected. While the dithizone method has many advantages for small quantity determinations, impurities interfere with this method. A neutron activation analysis is suitable for small quantity determinations because of its high sensitivity. The radioisotope tracer technique and activation analysis are very useful for this method. These techniques were used to establish a method, and the results were compared to those by the dithizone and gas detector tube methods. The absorbent was a saturated chlorine solution. After a two hour absorption, four ml of concentrated aqueous nitric acid solution was added to the absorbent. Then the mixture was concentrated to eight ml and sealed in the quartz capsule. Irradiation was carried out in HTR with neutron flux of 1.2 times 10 to the 11th power n/sq cm sec for five hours. After cooling for 100 hours, samples were taken from the capsule and determined by the nondestructive method. The sensitivity of this method was .0001 mg/cu m. However, the sensitivity can be improved by using irradiation with higher neutron fluxes and destructive methods.

12329 APTIC NO. 29806

Nulman, F. S. and Z. K. Olkhovskaya

DETERMINATION OF RUTIN AEROSOL IN THE AIR. *(Opredyeleniye aerozolya rutina v vozdukhe). Text in Russian. Gigiena i Sanit., 36(2):59-60, 1971.*

The method of rutin determination is described based on the reaction of monosaccharides with sodium bicarbonate which is accompanied by green-yellow coloration. The intensity of coloration depends on the amount of rutin present. The sensitivity of the method is 0.005 mg. The analyzed air was blown through filter AFA-V-18 at a velocity of 20 l/min. The filter was then washed in hot distilled water. After addition of 0.5 ml of 1% sodium bicarbonate solution, coloration was observed which was compared with a standard scale; 97% of rutin was removed from the filter in this way.

12330 APTIC NO. 30004

Okita, Toshiichi, James P. Lodge, Jr., and Herman D. Axelrod

FILTER METHOD FOR THE MEASUREMENT OF ATMOSPHERIC HYDROGEN SULFIDE. *Environ. Sci. Technol., 5(6):532-534, June 1971. 7 refs.*

A hydrogen sulfide analysis method was developed by combining the techniques of dry filter sampling and sensitive liquid analysis. A dry lead acetate-impregnated membrane filter is prepared by soaking the filter in 10% lead acetate, 5% hydrogen acetate for 5 min., drying in a desiccator, and storing in darkness. Sampled air containing H2A is passed through the filter to form lead sulfide which produces a brown stain. For analysis, the filter is dissolved in a mixed organic solvent and the resulting suspension measured with a spectrophotometer at 350 nm. The amount of H2S can be determined from a standardization curve. The reproducibility of the method is plus or minus 15% with very little humidity effect. At all flow rates, the filter will react with atmospheric H2S concentrations greater than 2 times 10 to the minus 9th power by volume; below this volume none of the H2S is captured. Small interference problems that occurred with high levels of sulfur dioxide, nitrogen dioxide, and ozone were overcome with selective prescrubbers.

12331 APTIC NO. 30061

Olin, John G., Gilmore J. Sem, and Dale L. Christenson

PIEZOLECTRIC-ELECTROSTATIC AEROSOL MASS CONCENTRATION MONITOR. *Am. Ind. Hyg. Assoc. J., 32(4):209-220, April 1971. 7 refs.*

Because filter sampling methods do not lend themselves to the rapid, automatic concentration measurements necessary for today s pollution monitoring networks, a piezoelectric-electrostatic aerosol mass concentration monitor was designed, constructed, and tested. The instrument measures particle mass, not some parameter of mass. Its time resolution is high; the mass concentration of typical atmospheric aerosols can be measured with 5% accuracy in about 10 sec and typical automotive particulate emissions in about 0.1 sec. The electrostatic precipitator has 100% collection efficiency for dense (100,000 microgram/cu m) cigarette-smoke aerosol used in the detailed collection-efficiency tests and for all other aerosols tested, including automobile exhaust, laboratory aerosols, and office aerosol. The mass sensitivity of the piezoelectric microbalance is within experimental error of its theoretical value for the above aerosols.

12332 APTIC NO. 27631

Olsen, Robert W. and Karl J. Springer

EXHAUST EMISSIONS FROM HEAVY DUTY VEHICLES. *Preprint, Society of Automotive Engineers, Inc., New York, 14p., 1969. 11 refs. (Presented at the National Combined Fuels and Lubricants and Transportation Meetings, Houston, Tex., Nov. 4-7, 1969, Paper 690764.)*

Exhaust emissions of carbon monoxide, nitrogen oxides, and hydrocarbons were studied in detail on a broad variety of heavy-duty gasoline vehicles by testing with three variable speed experimental procedures, using chassis dynamometers to simulate actual road operations. About 150 trucks and buses of all weight classes were investigated to determine the ability of each to perform with the respective experimental cycle, each vehicle's contribution of contaminants on a mass basis per mile driven, and the applicability of these cyclic test procedures for federal testing. The constant volume sampling system employed is a useful method for sampling the exhaust of such vehicles, especially for obtaining baseline data or survey data in which mass emissions are of paramount importance. Results were obtained from the 1970 Federal Heavy-Duty Gasoline Truck Cycle by both the continuous NDIR sampling and analysis system and the constant volume technique. No correlation of the two techniques was attempted, but data from vehicles run on the Federal cycle indicate that they do not correspond with the data from the experimental test cycles established to simulate actual vehicle operation. Hydrocarbons and NOx emissions were lower and CO about the same in vehicles fueled with liquid propane gas when compared to gasoline-fueled vehicles. Operation of borderline weight vehicles using alternative test cycles offered little justification for the use of different test procedures for the three classes of heavy-duty vehicles. Emissions data can differ greatly depending on the cycle employed, especially between Class III and IV. Baseline emission data and other test results are included.

12333 APTIC NO. 29460

Otto, Frans

A MEASUREMENT GRID FOR AIR POLLUTION IN THE MOUTH OF THE RIVER RHINE IN ROTTERDAM. *(Ein Messnetz fuer Liftverunreinigung im Rheinmuendungsgebiet bei Rotterdam). Text in German. Staedtehygiene (Uelzen/Hamburg), 22(4):97-99, 1971.*

In the mouth of the Rhine river in Rotterdam, 31 air pollution monitoring stations have been set up. The measure the sulfur dioxide concentration in the air 64 times per hour and transmit the measured values to a computer. The monitoring stations also measure the wind direction and wind speed. All measured data are transmitted via telephone lines to the computer, which computes 31 hourly averages 64 times per hour. Comparison of these values with those obtained at the same station at the same hour on the previous day indicates the trend of change of the SO_2 background concentration. If the computer s results exceed a certain limit, the industry is alerted. For the measurements, the air is drawn through a glass fiber filter which is heated to avoid SO_2 absorption at this point. At a speed of 150 ml/min the dust-free air is passed through a special filter where all interfering substances are eliminated. Then the air passes a measuring cell which contains a solution of potassium bromide, sulfuric acid, and bromine in water. The redox potential is measured with two electrodes and compared to a reference voltage.

12334 APTIC NO. 29983

Panchenko, L. N. and N. A. Shelkovskaya

DETECTION OF THE TOTAL AMOUNT OF ORGANIC SUBSTANCES IN THE DISCHARGED AIR FROM THE PRODUCTION OF SYNTHETIC FATTY ACIDS. *(Summarnoye opredyeleniye organicheskikh veshchestv v obrabotannom vozdukhe pri proizvodstve sinteticheskikh zhirnykh kislot). Text in Russian. Gigiena i Sanit., 36(1):77-9, 1971. 2 refs.*

In determining the total amount of organic substances in the air discharged from the production of synthetic fatty acids, a modified method of determining hydrocarbons was used consisting of combustion of organic substances in a stream of pure air in the presence of a catalyst, followed by absorption of carbon dioxide formed in a barium hydroxide solution and determination of the CO_2 amount from a decrease in $Ba(OH)_2$ titer. The combustion was carried out at 800 deg on active cupric oxide. The apparatus used is described, as well as the taking of samples. The method was tested on the combustion of organic substances which are expected to be present in effluents after paraffin oxidation. The relative error of determination was not more than 6.7%. The effluents after synthetic fatty acids production contained CO_2, which systematically increased results of determination of total concentration of organic substances by the combustion method. Carbon dioxide had to therefore be determined first by its absorption in potassium hydroxide followed by its precipitation by addition of barium chloride. By preliminary CO_2 determination, the accuracy of the method was substantially increased.

12335 APTIC NO. 29657

Peters, A. and A. Giller

COMPUTER APPLICATION IN THE ENVIRONMENTAL SCIENCE ANALYSIS AND CONTROL OF ENVIROMENTAL AIR. *(Taiki-osen o bokumetsu. Kankyokagaku o kushi shita kogai-boshi ni konpyuta wa do tsukawareruka). Text in Japanese. Computopia (Japan), 5(49):55-64, March 1971. 60 refs.*

The application of the computer for analysis and control of environmental air is presented. Actual examples and some charts for arrangement of the computers are given.

12336 APTIC NO. 30007

Ratcliffe, D. B., C. S. Byford, and F. T. Fabling

A METER FOR THE SITE DETERMINATION OF HYDROLYSABLE FLUORIDES IN SULPHUR HEXAFLUORIDE. *Chem. Ind. (London), no. 19:509-511, May 8, 1971. 2 refs.*

A monitor designed so that rapid site measurements can be made of the hydrolyzable fluoride content of sulfur hexafluoride gas in the concentration range of 0.1-1000 ppm w/w F(-) is described. Sulfur hexafluoride gas containing hydrolyzable fluorides is passed into a solution of constant ionic strength buffered at ph 5.5. Any hydrolyzable fluorides present are decomposed to form a solution of fluoride ions, the concentration of which is measured with a fluoride activity electrode. By equating the concentration of the fluoride ions in the hydrolysis solution to the volume of sulfur hexafluoride gas sampled, the concentration of hydrolyzable fluorides present in the sulfur hexafluoride can be calculated. Details of design and calibration, and comparison with other methods, are given.

12337 APTIC NO. 29665

Sakamoto, Keiichi and T. Nakadoi

MEASURING METHOD OF OZONE BY CHEMILUMINECENCE. *(Kemikaru-ruminessensu-ho niyoru ozonsokuteiki). Text in Japanese. Taiki Osen Kenkyu (J. Japan Soc. Air Pollution), 5(1):79, 1970. (Presented at the Japan Society of Air Pollution, Annual Meeting, 11th, Japan, 1970.)*

The new type of automatic measuring equipment was tried to determine ozone in the air produced by photochemical reaction. When the air sample is passed over a disc treated with silica and rhodamin B, it gives off fluorescence by the presence of ozone. This fluorescence was not affected by sulfur dioxide, nitrogen dioxide, chlorine, or atmospheric temperature.

12338 APTIC NO. 29843

Sakata, Ei

ENVIRONMENTAL POLLUTION AND ITS MEASUREMENTS (II). *(Kogai- kankyo osen to seno sokutei (II). Text in Japanese. Shin Kinzoku Shiryo (J. Japan Soc. Newer Metals), no. 182:57-62, March 1971.*

Measurement equipment is classified into the following groups: continuous autoanalyzers which are located at contaminated spots and are generally used for the measurement of one species; iinstruments which are placed in a laboratory because of the difficulty of complete automation and which have diverse uses, are versatile and apparatus used for the research on pollution control techniques. The principles, mechanisms, applications, and advantages are given for an infrared gas analyzer used for the measurement of carbon monoxide and sulfur dioxide; a visible-ultraviolet gas analyzer for nitrogen dioxide and chlorine; a conductometric analyzer for sulfur oxides; an autoanalyzer by absorptiometry for nitrogen oxides, sulfur dioxide, and oxidant; an automatic electrochemical analyzer for nitrogen oxides, sulfur dioxide, oxidant, hydrogen sulfide, and chlorine; a hydrogen flame ionization detector in a gas chromatograph for hydrocarbons, and a dust monitor. Emission spectrometry for the qualitative and quantitative analysis of metals, atomic absorption spectrometry for the qualitative and quantitative analysis of metals, atomic absorption spectrometry for the routine measurement of small numbers of metals, visible-ultraviolet spectrophotometry, fluoro-spectrophotometry, and gas chromatography for mixed samples applied to odor analysis, and mass spectrometry are also discussed.

12339 APTIC NO. 29970

ANALYSIS OF MONOETHANOLAMIN IN THE AIR. *(Analiz monoetanolamina v vozdukhe). Text in Russian. Gigiena i Sanit., 36(2):60-62, 1971. 9 refs.*

A method for the quantitative determination of monoethanolamine in the air is described based on its absorption from the air in a diluted acid, followed by its oxidation by periodic acid to formaldehyde and colorimetric determination of formaldehyde with chromotropic acid. The effect of pH of the medium, duration and temperature of oxidation, and amount of periodic acid present on conversion of ethanolamine to formaldehyde was studied. Oxidation was successful only after complete neutralization of periodic acid; further increase in pH had no effect. Best results were obtained when HI04 was neutralized by sodium bicarbonate, and after 30 minutes heating to 40 deg. Further increase in temperature was unfavorable; 0.2 ml of 1% neutralized HI04 were enough for determination of 0.04-2 micrograms of ethanolamine. The conversion of ethanolamine to formaldehyde was almost quantitative. Sensitivity of the method is 0.04 micrograms in a sample. Presence of formaldehyde or products that oxidize to formaldehyde under the conditions of the analysis disturb the ethanolamine determination. Amines in the amount of up to 100 micrograms do not interfere with analysis.

12340 APTIC NO. 29066

Schuetz, H.

THE MEASUREMENT OF ATMOSPHERIC POLLUTION IN GERMANY. *(La mesure de la pollution atmospherique en Allemagne). Text in French. Tech. Moderne, 63(2):74-78, Feb. 1971.*

The equipment, test procedures and the processing of measuring results at the pollution measuring stations at Frankfurt/M., in Munich, and West Berlin are described. In Frankfurt and in Munich all gas concentrations and meteorological data are received in the form of signals and are processed by computers so that median measurment results are immediately available. Sulfur dioxide is measured by the trace gas analyzer Picoflux L. In this instrument a constant flow of gas to be analyzed reacts with a constant flow of a reaction solution. The electric conductivity of the reaction solution varies with the concentation of the measured constituents. A cartridge with a silver sponge neutralizes the effect of interfering gases such as ammonia, hydrogen chloride, chlorides and hydrogen sulfide. Carbon monoxide and dioxide are measured by the infrared analyzer URAS manufactured by Hartmann and Braun which works on the principle of infrared light absorption. Nitrogen oxides are measured by means of a buffered potassium iodide solution, hydrogen sulfide by means of a sodium carbonate solution saturated with silver iodie by the method used for SO2 determination. Hydrocarbons are measured by a flame ionization detector and dust by the SH 62 A dust monitor manufactured by Friesecke and Hoepfner.

12341 APTIC NO. 30120

Schwartz, Arthur

CORRECTION: DETERMINATION OF HYDROGEN SULFIDE, SULFUR DIOXIDE, CARBONYL SULFIDE, CARBON DISULFIDE, AND CARBON DIOXIDE IN A GAS MIXTURE. *Anal. Chem., 43(7):907, June 1971. (See APTIC 27278.)*

Six errors in the article by Arthur Schwartz in the March 1971 issue of Analytical Chemistry are noted and corrected. In addition, instructions are given for the standardization of 0.1N sodium thiosulfate.

12342 APTIC NO. 30097

Seely, Janet E., Eugenija Zuskin, and Arend Bouhuys

CIGARETTE SMOKING: OBJECTIVE EVIDENCE FOR LUNG DAMAGE IN TEEN-AGERS. *Science, vol. 172:741-743, May 14, 1971. 11 refs.*

High school students with 1 to 5 years smoking experience were shown to have excessive cough, sputum production, and shortness of breath. Two separate lung function tests were employed which measured different aspects of maximally forced expirations. A direct-reading spirometer was used to measure the air volume that can maximally be exhaled in 1 second (FEV) and the full volume range of the forced expiration, that is, the forced vital capacity (FVC). Each subject made five blows into the machine; the average of the two highest FEV and FVC values was taken as the result. The same maneuver, a maximum inspiration followed by a forced and maximum expiration, was also used to record instantaneous expiratory flow rates versus lung volume with a flow-volume spirometer. When maximum expiratory flow was plotted against maximum expired volume, the curves of smokers and non-smokers differed in shape. The smokers had lower flow rates at mid-vital capacity and at lower lung volumes. This probably reflects small airway obstruction in the smokers. (Author abstract modified)

12343 APTIC NO. 29505

Shirai, Mitsuo, Yoshiichi Hashimoto, Hidenari Inoue, and Saburo Aizawa

ON THE EFFECT OF ACCOMPANYING GASES IN QUANTITATIVE ANALYSIS OF HYDROGEN SULFIDE USING METHYLENE BLUE. *(Mechiren buru ho ryukasuiso teiryo ho ni okeru kyson gasu no eikyo ni tsuite). Text in Japanese. Preprint, Japan Chemical Society Tokyo, 1p., 1971. (Presented at the Japan Chemical Society, Annual Meeting, 24th, Tokyo, March 1971, Paper 3409.)*

The spectroscopic method using methylene blue and the filter paper method are excellent for making quqntitative analyses of hydrogen sulfide in the atmosphere. However, the spectroscopic method had several problems. The cadmium absorbing liquid did not keep the sulfide ion well, and liquid containing zinc showed better results. Also, it was sensitive to light. However, there have not been many reports concerning the accompanying gases which might interfere. A zinc amine absorption liquid was used to study the interfering substances. Major coexisting and interfering substances, are sulfur dioxide, nitrogen dioxide, and oxidant. The interference by these substances, when they are in liquid form was tested by the change in light absorption in sulfuric acid and sodium hydroxide, sodium nitrite and nitric acid kalium, and potassium iodate colored solutions. Sulfur dioxide, a reduction gas, had no effect on the degree of light absorption, until it reached considerable concentration. Nitrogen dioxide and oxidant had a large negative effect, and the degree increased linearly as concentration increased. At present, if the concentration of H_2S in urban areas is about 10 ppb, NO_2 is supposed to be 4 or 5 times that, and oxidant will be much more than that. When hydrogen sulfide is measured in field tests these interfering substances must be measured simultaneously. The use of solutions instead of interfering substances caused other problems. The correction coefficient and degree of absorption of each substance were determined. Another problem was the use of potassium iodate in place of oxidant. Potassium iodate does not completely represent oxidant such as ozone.

12344 APTIC NO. 30119

Sholtes, R. S., R. A. Herrick, D. Lundgren, C. Phillips, E. Stein, J. Wagman, and P. F. Woolrich

TENTATIVE METHOD OF ANALYSIS FOR DUSTFALL FROM THE ATMOSPHERE. *Health Lab. Sci., 8(2):111-113, April 1971. 5 refs.*

Large particulate matter can be measured by exposing an open- mouth polyethylene container filled with distilled water, algacide, or fungicide for a period of approximately one month. Following collection, samples can be analyzed in many ways to suit the needs of specific situations. The gross measurement of soluble and insoluble fractions is normally undertaken after they have been separated by filters. Further physical analyses can be performed on the insoluble dust fall such as, particle size distribution and specific gravity. Chemical analysis can be performed on either fraction to determine the elemental composition or compounds of specific interest in local situations. The lower limit of measurement is approximately 0.2 g/sq m/month.

12345 APTIC NO. 29839

Siepmann, Reiner

DETERMINATION OF ORGANICALLY BOUND CARBON IN MOIST WASTE GASES. *(Bestimmung des organisch gebundenen Kohlenstoffs in feuchten Abgasen). Text in German. Wasser Luft Betrieb, 15(4):128-130, 1971. 6 refs.*

A new method for determining carbon in moist waste gases is described which eliminates measurement errors caused by the humidity of the gases. The water in the waste gas is condensed through cooling to obtain a gas sufficiently dry for analysis. The condensate, which contains a considerable fraction of the total carbon content, must also be analyzed. The following procedure proved to be efficient down to concentrations of 5 mg/cu m and a water saturation of up to 80 C. The cooler holds an adsorption tube (dry gas) and a 5 ml flask (condensate). The gas speed can be 50 l/hr for a cooler length of 350 mm. The cooling water temperature must be below 15 C. To avoid interferences the condensate is mixed with 1 ml n/10 $Ba(OH)_2$ prior to evaporation. This is not necessary for neutral or acid gases at less than 1% CO_2 in the gas. The tube for the condensate analysis is packed with quartz glass wool. The evaporation speed of the condensate in the oxygen stream 5 l/hr is limited to a maximum of 0.5 ml/min, the maximum temperature to 300 C. A 10 ml CuO packing is used at 850 C as the oxidation catalyst. Instead of titration with $Ba(OH)_2/HCl$, coulometric titration is applied.

12346 APTIC NO. 29784

Spurny, K.

POROUS ANALYTICAL FILTERS AND THEIR USE IN AIR HYGIENE. *(Porove analyticke filtry a jejich pouziti v hygiene ovzdusi). Text in Czech. Cesk. Hyg. (Prague), 16(1):21-28, 1971. 32 refs.*

Various porous analytical filters are described including nuclear and metal porous filters. Both can be used for the determination and concentration, dispersion, and chemical composition of dusts and aerosols. Nuclear porous filters can also be used in the electron microscopy of aerosols and for the determination of mean particle size in high dispersion aerosols. The hydrodynamic and filter properties are described. Also, these filters are a suitable supplement for the classical membrane filters.

12347 APTIC NO. 30065

Stevens, R. K., J. D. Mulik, A. E. O Keefe, and K. J. Krost

GAS CHROMATOGRAPHY OF REACTIVE SULFUR GASES IN AIR AT THE PARTS- PER-BILLION LEVEL. *Anal. Chem., 43(7):827-831, June 1971. 5 refs.*

An automated gas chromatographic system was developed for quantitative measurements of ambient concentrations of sulfur dioxide, hydrogen sulfide, methyl mercaptans, and dimethyl sulfide down to 0.002 ppm. In the past, tenacious adsorption of reactive sulfur compounds on column walls or the solid support, or irreversible reaction with the stationary phase, prevented concentrations below 1 ppm from being eluted quantitatively from conventional chromatographic columns. The system uses a flame photometric detector and fluorinated ethylene-propylene (FEP Teflon) as standard column material. The system produces a specific quantitative response to SO_2 and H_2S since the FPD has at least a 10,000:1 rejection ratio between sulfur and nonsulfur compounds and the elution order of these compounds is such that no other known sulfur compound in the atmosphere could be eluted before or with these species. Area response for varying concentrations of the sulfur compounds measured are listed as are the minimum detectable level of the compounds. Typical chromatograms of ambient air in Cincinnati, as measured by the system, are included.

12348 APTIC NO. 29863

Suga, Nagaichi and Yoshimune Masuda

ON THE MEASUREMENT AND ABSOLUTE CALIBRATION OF THE STRENGTH OF SOLAR RADIATION ENERGY. *(Taiyo energy kyodo tokuni shigaisen sokuteichi no zettai kakusei ni tsuite). Text in Japanese. Taiki Osen Kenkyu (J. Japan Soc. Air Pollution), 5(1):67, 1970. (Presented at the Japan Society of Air Pollution, Annual Meeting, 11th, Japan, 1970.)*

An explanation is presented of the newly developed photometer which converts the radiation to mW min/sq cm pulse. It is possible to measure total energy and/or UV, VIS, and IR radiation separately. An absolute calibration chart is depicted.

12349 APTIC NO. 30134

Takase, Iwao, Hideko Tsuda, Sadako Nakamura, and Shimpei Kuyama

THE GAS CHROMATOGRAPHIC DETERMINATION OF PESTICIDES. (PART 3) DETERMINATION OF RESIDUES OF ORGANOPHOSPHORUS PESTICIDES. *(Gasu kuromatogurafi niyoru biryo bunsekiho (dai 3 po) yuki rin noyaku no zanryu bunsekiho niokeru ichi chiken). Text in Japanese. Noyaku Seisan Gijutsu (Pestic. Tech.), no. 22:13-21, Aug. 1970. 7 refs.*

Residues of several pesticides (Baycid--0,0-dimethyl 0-(4-methylthio-m-tolyl) phosphorothioate and Disyston--0,0-dimethyl were analyzed by thin layer or liquid chromatography. Aliquots of the concentrated fractions were injected into a gas chromatograph equipped with a flame photometric detector or alkali flame thermionic detector sensitive to phosphorous. Baycid, Disyston, and their metabolites were converted to the corresponding sulfones, using potassium permanganate as the oxidant. Then recovery experiments were run on rice grain or onion by adding 0.1 to 0.2 ppm of Baycid or metabolites at the extraction step. Recoveries were in the 94 + or 10% range. Sensitivity was 0.005 ppm or better. A flame photometric detector, highly specific for phosphorous- and sulfur- compounds was useful for the analysis of Hinosan (0-ethyl S.S-diphenyl phosphorodithiolate) and its metabolites.

12350 APTIC NO. 29748

Terabe, Mototsugu

PROGRESS IN MEASUREMENT OF AIR POLLUTION. *(Taiki osen sokutei no shinpo). Text in Japanese. Preprint, Association of Safety Engineering, Yokohama (Japan), 20p., 1970. 13 refs. (Presented at the Association of Safety Engineering Seminar, 17th, Yokohama, Japan, Feb. 1970.)*

Environmental measurement of pollutants is explained and the results are compared and studied. More modern equipment for measurement must be introduced for the micro-analysis of heavy metals. Adequate sampling analysis are important in air pollution measurement. Major methods with emphasis on monitoring are tabulated and explained. Measurements from five different samplers made on the roof of a hygiene experimental station are compared. Use of the Andersen sampler for dust particulates. The preparation of standard gas and use of a permeation tube are explained. The nitrogen dioxide measurement method and Saltzman coefficient from the Saltzman method are shown. Automatic measurement of sulfur oxides include electric conductivity ratio method and West-Gaeke method. The Thomas autometer is not affected by nitric oxide or NO2 very much. The lead peroxide method is simple and allows long term observation in a wide area. By using corrective coefficients, comparisons can be made with the British standards. A detection paper using phenol red was developed. Air pollution corrodes metal parts and causes paints to slake off. The degree of metal corrosion and rubber cracking are a means of evaluating air pollution.

12351 APTIC NO. 30038

Turpin, Pierre-Yves

PHOTON DETECTION OF LIGHT DIFFUSION WITH ULTRAFINE AEROSOLS. *(Detection photonique de la lumiere diffusee par les aerosols ultrafins). Text in French. Rev. Opt., Theor. Instrum., 46(6):309-326, 1967. 10 refs.*

The diameter of extremely small aerosol particles was determined by measuring the light intensity scattered by every particle crossing the field of a suitably illuminated photometer. Because of the low level of the scattered energy, only a discontinuous train of photons was detected. The experimental results were in good agreement with those derived from the Mie scattering theory. The smallest particle diameter detectable by this method was about 0.06 micron. The diffusion models used are also discussed.

12352 APTIC NO. 29461

Udo, Heihachiro, Reisuke Souda, and Juji Korei

MEASUREMENT OF GAS CONCENTRATION UTILIZING LIGHT SCATTERING BY PARTICULATES. *(Ryushijo busshitsu ni yoru hikari sanran o riyo shita gasu nodo sokutei). Text in Japanese. Preprint, Japan Chemical Society, Tokyo, 1p., 1971. (Presented at the Japan Chemical Society Annual Meeting, 24th, Tokyo, 1971, Paper 3403.)*

Improvements of a device to measure gas concentration, and studies of its capacity and of factors influencing the formation reaction are reported. The air to be tested is introduced into one orifice of the detection tube and the air containing an appropriate reaction gas is drawn into a second opening. Within the tube is wire covered with a protective tube seal, so that during heating there is an up-rising current. The heat is measured at one end of the tube. When the light enters from the light source it becomes parallel; the scattered light occurs from the particulates entering the photocell is placed at right angles. The intensity of scattered light is transmitted to a recorder and measured. When there is a large eddy, the particulates remain in the tube, and measurement is inaccurate; thus, care must be taken so that the eddy is as small as possible. When the sample is prepared by standard gases, the scattered light intensity increases. The difference between the intensity and a particular current is caused by sulfur dioxide.

12353 APTIC NO. 29999

Wanner, H.-U.

STUDIES IN INDOOR SWIMMING POOLS WITH OZONIZATION PLANTS. *(Untersuchungen in Hallenschwimmbaedern mit Ozonisierungsanlagen). Text in German. Arch. Hyg., 154(5):462-473, May 1971. 15 refs.*

The ozone concentration of the ambient air was measured in five indoor swimming pools using a method suitable for both indoor and outdoor ozone measurements 3 liters of air per minute were drawn through three successive midget impingers which are in a water bath with temperatures between 0 and 3 C. Each contains 10 ml of a neutral, buffered 1% potassium iodide solution. After sampling, the solutions in the impingers are replenished to 12 ml and stored at 0 to 3 C. Determination of the iodine concentrations liberated by the ozone is carried out with a spectrophotometer at wave lengths of 352 nm. For acidification of the samples, sulfamic acid, which has been saturated in 10% sulfuric acid, is used. For the calibration curve, solutions of potassium iodate or iodine are used, which are added to the absorption solution. A linear dependence on the excinction exists for concentrations of 20 micrograms.

12354 APTIC NO. 29549

Wright, B. M.

THE IMPORTANCE OF AGGREGATION PHENOMENA IN THE QUANTITATIVE ESTIMATE OF DUST IN THE AIR. *(L importance des phenomenes d agregation dans l estimation quantitative des poussieres atmospheriques). Text in French. Lab. Central des Services Chimiques de L Etat, Paris (France), and Inst. National de Securite pour la Prevention des Accidents du Travail et des Maladies Professionnelles, Paris (France), Colloq. Securite Sociale Serv. Prevent., 3rd, Paris, France, 1955, p. 41-44. (Nov. 3-5.)*

To properly evaluate dust content it is necessary to know how much of it is respirable. The ratio between the respirable and total particle content can vary considerably. In tests conducted in three British coal mines for 14 days, filters were used to determine dust concentration by weight. One group of filters measured the total weight, the other the weight of particles below 7 microns in size. In mine A, the weight ratios between particles below 7 microns and total dust content ranged from 1:2 to 1:5, in mine B from 1:4 to 1:6, and in mine C from 1:4 to 1:8. The filters for determining the weight of particles not exceeding the 7-micron size were used in conjunction with a selector which was mounted ahead of the filter and retained the larger particles. The principle of the selector design is to compress the air sample and to force it through orifices of a pre-selected size, so that only particles not exceeding that size will pass through the filter.

12355 APTIC NO. 29677

Yanagisawa, Saburo

JIS ANALYTICAL PROCESS FOR NITROGEN OXIDES IN WASTE GAS. *(JIS hai gasuchu chisso sankabutsu bunsekiho to sono mondaiten). Text in Japanese. Preprint, Japan Society of Analytical Chemistry, Tokyo, 2p., 1971. (Presented at the Nitrogen Oxides Conference, 3rd, Tokyo, Japan, Jan. 22, 1971.)*

The generation and elimination of nitric oxide and nitrogen dioxide and the analytical process for nitrogen oxides the JIS ethylene diamine method are disucssed. One third of NOx are from automobile exhaust fumes and the rest are from industrial sources. An improvement of the combustion mechanism (boiler design or motor engine change) can prevent this generation. Nitric oxide converted into carbon monoxide and nitrogen gas with the existence of hydrocarbons, and the CO is then oxidized to carbon dioxide. Several reactions are used for the elimination of NO: ammonium nitrate and ammonium chloride are formed with the addition of chloride and ammonium; lead nitrate can be produced by lead dioxide sodium chloride and sodium hydroxide form sodium nitrate and sodium chloride; the oxidation of NO makes oxygen and NO2; nitrogen dioxid can be formed with the existence of silver permangante; and cuprous oxide and manganese oxides help to make NO2. N(1-naphthyl) ethylene diamine hydrochloride, or N ethylene diamine, together wit sulfanilic acid or sulfanilamide, is used as a reagent for the JIS ethylene diamine method to determine nitrogen oxides. Ammonia water or NaOH is used as the absorption liquid; in the former case, NO2 and ammonium hydroxide produce NH4NO3 and, NH4NO2, and NO and NH4OH form NH4NO2 and nitrogen gas; for the latter case, NO2 and NaOH make NaNO3 and NaNO2. Gas is sampled with a syringe, and a swift determination of coexistent NO and NO2 must be made. Other oxidation methods for NO are air oxidation, permanganic acid method and chromic acid method. The Saltzman coefficient is important in coloring by NO2 absorption. Colorimetry and nondispersive infrared or ultraviolet absorption are applied to the continuous analysis.

12356 APTIC NO. 29398

Yatabe, Teruo and Hisashi Fukuzawa

INVESTIGATION ON THE MEASURING ERRORS OF CONDUCTOMETRIC SULFUR DIOXIDE ANALYZER USED FOR AIR POLLUTION MONITOR. *(Taikichu no SO2 sokuteiyo dodenritsushiki SO2 kei no sokutei). Text in Japanese. Nenryo Kyokai (J. Fuel Soc. Japan) (Tokyo), 50(527:171-177, March 1971. 7 refs.*

In Japan the concentration of sulfur dioxide in atmosphere is measured by conductometry. The automatic conductometric meter generally shows the concentration of water-soluble electrolytes in the air, and the method seems to be adopted with an opinion that the principal pollutant in the air is sulfur oxides. But the conductometric meter generally shows a rather higher value compared with the conventional West-Gaeke method. The errors of the conductometric meter for sulfur dioxide measurements are discussed, with emphasis on the evaporation loss of the absorbing solution, which is unavoidable and seems to be the dominant error in this method. It was conformed that the higher values obtained in comparison with the West-Gaeke method are caused by the loss of the sensitive cell solution during gas sampling. The quantity of the evaporation loss is a function of temperature of the absorbing solution, the temperature and humidity of atmosphere, and the quantity of collected air; and correction can be made by calculation. Correction procedures for observed values are shown; the corrected values almost agree with the concentrations of standard gas. The error from evaporation loss of the absorbing solution is large when the temperature, humidity, and sulfur dioxid concentration are low.

12357 APTIC NO. 29864

Yoneyama, Etsuo

MEASUREMENT OF ATMOSPHERIC DUST BY LIGHT SCATTERING METHOD AND HIGH VOLUME SAMPLER METHOD. *(Kosanranho, high volume air samplerho niyoru fuyu funjin no sokutei ni tsuite). Text in Japanese. Taiki Osen Kenkyu (J. Japan Soc. Air Pollution), 5(1):52, 1970. (Presented at the Japan Society of Air Pollution, Annual Meeting, 11th, Japan, 1970.)*

Atmospheric dust was measured by a light scattering photometer and a high volume air sampler in Yokohama city. The average amount of dust varied 68 counts per hour (cph) in summer to 130 cph in winter; sometimes in January it was over 1000 cph. The relation between the amounts of the dust in the air and visibility was also studied.

12358 APTIC NO. 29929

Yoshida, Masaaki

STUDIES IN THE PSYCHOLOGY OF OLFACTION. (4). QUALITATIVE CLASSIFICATION OF ODORS. *(Kyukaku no riron. (4)). Text in Japanese. Akushu no Kenkyu (Odor Research J. Japan), 1(4):1-8, March 1971. 5 refs.*

Studies on olfaction psychology are reviewed. Osgood s semantic differential method has been applied to the area of the senses which are difficult to express in words. In Japan, studies were made on the harmonious degree of colors, the quality of sound, and the touch of textiles. Studies on olfactory sense were made by Wright and Michels (1964), Schutz (1964), Harper-Land-Bate-Smith (1968), and Yoshida with differences in the methods used. Yoshida reported the principle of the classification of odors. Harper (1968) selected representative odorous substances that included representative chemical structures. They contain low, medium, and high ceilings and low, medium, and high degrees of pleasantness. The level of concentration used in experiments is harmless and does not change its nature for 4 weeks, even though exposed to air from time to time. Schutz seeks a correlation between the profiles of stimulant matter used as the sample by using 27 kinds plus liking and intensity. The method used by Wright and Michels examines the relationship between the infrared spectrogram and the characteristics of smells. Using nine standard substances, the panel members remembered them and evaluated the similarity of 50 substances by six steps. The credibility on similarity is very high. Since the vocabulary of many people is poor monitors with only a little knowledge and experience have less difficulty with the Schutz or Wright and Michels methods.

AIR QUALITY MEASUREMENTS

12359 APTIC NO. 29050

Organization for Economic Co-operation and Development, Paris (France)

RESEARCH FACILITIES NECESSARY TO ADEQUATELY SUPPORT MEASUREMENT OF LOW LEVELS OF POLLUTANTS AND FOLLOW THEIR TRENDS. *39p., Sept. 22, 1970.*

The research facilities needed in support of the measurement of low levels of air pollution and their trends are discussed. The Schauinsland Station, already in operation in Germany, is fully described. Its apparatus and measurement methods are listed and illustrated by photographs and diagrams. The budget for equipment and annual operating expense is given. The report also describes activities at a pilot station in Sweden and gives a description of some of the facilities available at the Institute of Occupational Health in Helsinki, Finland. It notes that a reasonably well equipped station of this sort requires a first-year investment of about $125,000. Stations should be located near an already established advanced research complex so that they can share expensive items such as x-ray equipment and electron microscopes. At this stage of development in the measurement field, some form of cooperation between pilot stations internationally would give a better return on investment nationally. Benefits to be expected from the cooperation among pilot stations include the following: provision of required site dispersal for testing new measurement techniques and instruments; the availability of measurement capability for application both in highly polluted areas and in background locations; the rapid development of research on measurement; the development of a more complete spectrum of knowledge in terms of occurrence and trends of a wide range of pollutants, enabling authorities to better predict pollution levls; and the study of a wider and more complex range of problems without considerable increase in research investment by a single country.

12360 APTIC NO. 29055

Organization for Economic Co-operation and Development, Paris (France)

A SUGGESTED OUTLINE FOR PROVIDING INFORMATION ON FACILITIES EXISTING IN COUNTRIES AT PILOT STATION. *In: Research Facilities Necessary to Adequately Support Measurement of Low Levels of Pollutants and Follow Their Trends. Chapt. 6, p. 38, Sept. 22, 1970.*

An outline for providing information on existing pilot station facilities is presented. It was agreed that reports should be made at six-month intervals on funds available for setting up and running the stations, laboratory personnel, location of researc and sampling facilities sampling and anlytical methods (distinguishing between routine), established methods and those under development), or projected instrumentation in use, on order and research and development work on sampling and analytical methods. An outline of positive and negative experience with instrumetation, and aspects of work planned for the near future, should also be included.

12361 APTIC NO. 29465

Tokyo Metropolitan Environmental Pollutions Research Inst. (Japan)

REPORT ON LEAD POLLUTION SURVEY. *(Namari kogai chosa kokoku). Text in Japanese. 54p., March 1971.*

The urine and blood of people in the neighborhood of 11 busy intersections in Tokyo, were tested for lead concentration; carbon monoxide and lead concentrations in the atmosphere were also measured. The samples were collected for 10-14 hours. The average lead concentration at the intersection was 100, ppm (?), the area along the road averaged 84.4 ppm (?), the hunterland averaged 44.8 ppm (?). Although the relationship between CO and lead varied depending upon traffic, the recurrent coefficient varied from 1.6-3.4, with a tendency to increase. The correlation between CO and lead concentration was significant in every area, with a minimum of 0.670. The indoor lead concentration is influenced by the atmospheric concentration unless there is any source of lead generation inside the building.

12362 APTIC NO. 29490

MERCURY IN THE AIR. *Environment, 13(4):24, 29-33, May 1971. 9 refs.*

An airborne survey has revealed that coal-burning power plants, municipal incinerators, and several industrial plants are emitting large quantities of mercury vapor. Measurements were made of air taken from the plumes discharged from smokestacks with the Barringer mercury spectrometer mounted on a helicopter. Calculations were then made to estimate the total quantities of mercury vapor being emitted from these sources. Eight power plants accounted for a total of 8700 pounds per year of mercury emitted into the atmosphere, while the four incinerators emitted an estimated total of 12770 pounds per year.

12363 APTIC NO. 29510

Tokushima Prefecture Public Nuisance Dept. (Japan)

AIR POLLUTION. *(Taikiosen kankei). Text in Japanese. In: The Outline of Countermeasure for Public Nuisance. (Kogai taisaku gaiyo). Chapt. II - 1. p. 93-206, March 1970.*

The following aspects of air pollution are described for 1968 and 1969 for Tokushima Prefecture, the background of air pollution in Tokushima Prefecture which has two industrial areas, Imagiri and Anami, and the amounts of sulfur dioxide, other poisonous gases, particulate matter, poisonous material in flue smokes, and motor exhaust gas; meteorological observations, the effect of SO2 on forest products, metal corrosion in the suburbs of Imagiri area; and the effect of air pollution on respiratory disease in primary school pupils and in middle school pupils in Tokushima Prefecture. The degree of SO2 pollution was lower than that of the Japanese standard (average for the year was 0.05 ppm). Sulfur dioxide effects metals; in general, iron, copper, and tin were easily rusted and aluminum, zinc, and stainless steel were hard to rust. A constant relationship between SO2 concentration or air pollution and chronic bronchial asthma frequency was not found.

12364 APTIC NO. 29798

REPORT FROM THE NETHERLANDS: MEASUREMENT GRID FOR AIR POLLUTION. *(Bericht aus den Niederlanden: Messnetz fuer Luftverunreinigungen). Text in German. Wasser Luft Betrieb, 15(2):70-72, Feb. 1971.*

A grid comprising 64 sampling units is in operation to monitor ambient sulfur dioxide concentrations in the Rhine area of the Netherlands; wind strength and direction are also measured. Data are passed to a computer which calculates hourly averages of SO2 and compares the values with those determined at the same time of the previous day. An alarm is given if the computation exceeds a certain limit. Glass fiber filters are used to collect SO2 concentrations, which then proceed to an electroconductivity measuring cell.

12365 APTIC NO. 29973

Tokyo Metropolitan Environmental Protection Research Inst. (Japan)

POLLUTIONS AND TOKYO METROPOLITAN GOVERNMENT. *(Kogai to Tokyo-to). Text in Japanese. 724p., June 1970.*

Ten thousand and four hundred facilities are required to report under Air Pollution Control Law, of which 91% are boilers. In the six central wards, there are 37% of the total boilers, considered to be for heating of buildings. There are only 17 open hearths, 84 cupolas, 61 electric furnaces for steel-making, 25 boilers for thermal generation, and 45 facilities to supply city gas. Of the 19 stacks taller than 70 m, 13 are in Kawasaki City, and nine are in Yokohama; these 41 stacks emit 6,783.3 cu m sulfur dioxide. Pollutants emitted in a year in Tokyo are: 857,000 tons of carbon monoxide, 444,000 tons of SO2, and 30,000 tons of particulates. This is roughly twice as much SO2 and CO as in the U. S. Metals and sulfuric acid mist adhere to dust. Also the 10 micron and submicron particulates from electric furnace can be seen only under electronic microscopes. At a busy intersection in Tokyo, 11.6 ppm CO on the ground was measured, the daily average was 11.6 ppm and 12.3 ppm at another crossing. Nitric oxide concentration in front of the Metropolitan Government Office was 0.078 ppm, annual average, but in the hinterland, the concentration of nitrogen dioxide was greater. The number of cars has increased at the rate of 100,000 a year since 1960, and at 200,000 since 1966; recently there is one car for every 6.5 people. Most of CO is estimated to have been caused by the automobiles gasoline combustion. Cars emit NO at high concentrations near the ground. Also, 270 complaints out of 1000 complaints on air pollution lodged with the Metropolitan Government in 1960 concerned the factories which generated harmful substance and obnoxious odor. Of 12,000 factories, employing more than 20 workers, about 5000 are suspected of emitting harmful gas and obnoxious odor. Since 1964, manuals on guiding these enterprises have been in use on dust, harmful substance (ammonia and chromium acid mist), and there are 14 in all as of March, 1969. Thirteen automatic measuring equipment stations have been installed to measure SO2 and micro particulates (rate of filtering) and six stations measure CO, NO, and NO2 (to be increased to nine in the future). At present, five spots on major highways measure CO, NO, NO2, and hydrocarbons (to be increased to 10 spots in 1969 and 1970). Air pollution control agreements have been concluded between the Tokyo Metropolitan Government, the Tokyo Electric Power Co., and the Tokyo Gas Co.

12366 APTIC NO. 30047

Doncaster County Borough (England), West Riding County Council

CONCASTER, AN AREA STUDY. *p. 85-86, 165, 1969.*

Air was sampled at seven locations during an area survey of Doncaster. Smoke and sulfur dioxide were compared for 1965 and 1966 with the national averages for similar sites. Smoke was above the national average, but was no worse than in other industrial parts of West Riding. Smoke control in the region has considerably lowered the smoke pollution since 1961. Although SO2 is a growing national problem, it was not as serious in Doncaster. Grit and dust fall is no longer included in the National Air Pollution Survey, so the last data are for 1963-64 when the measurements were close to national averages.

12367 APTIC NO. 29727

Abe, Sanshi

TEN YEARS OF AIR POLLUTION IN HOKKAIDO. *(Hokkaido no taiki osen no 10 nen). Text in Japanese. Taiki Osen Nyusu (Air Pollution News), no. 63:5-12, March 1971.*

Of 30 cities in Hokkaido, only six monitor air pollution. Sapporo, Asahigawa, and Obihiro are primarily residential areas; Muroran is an industrial city, and Kushiro and Tomakomai are medium-sized cities. The pollution of the first three cities is mainly from seasonal pollution, heating in the winter and automobile exhaust gases throughout the year. The industrial city s pollution is from a large group of factories on the Pacific coast, and the medium sized cities are polluted from heating, exhaust gases, and also from industrial pollution. In Sapporo, in the past 10 years soot and dust decreased, while in 5 other cities, since 1963 or 1964, it is on the increase. The dust in air was high in the residential areas and low in the industrial city. In 1969, sulfur oxides were Muroran (1.1), Asahigawa (0.82), Tomakomai (0.64), Sapporo (0.61), Kushiro (0.50) and Obihiro (0.37), as (SO3 mg/day/100 sq cm /PbO2). The sulfur oxides decreased in Obihiro and Sapporo, and increased i the other 4 cities. The distribution of 3, 4-benzpyrene was: Muroran, in winter (average 162.0; minimum, 34 maximum, 437 g/1,000 cu m); in summer (average, 108.4; minimum 22; maximum, 200) in Obihiro, it was: in winter (average, 86.2; minimum 48; maximum, 180) and in summer (average, 8.47; minimum 2.6; maximum, 12.0). Nitric oxide decreased in Sapporo from 1968 to 1969. The concentration of NO also decreased. The ratio of complaints of air pollution against the total complaints of pollution in Hokkaido was in 1964, 80 cases (13.4%); in 1965, 209 cases (13.3%); in 1966, 108 cases (21.3%); 1967, 149 cases (19.2%); in 1968, 118 cases (20.2%); and in 1969, 101 cases (18.0%). The staff in charge of pollution increased from 12 in 1963 to 39 in 1969. The allocation for pollution in Hokkaido increased 1128%. Seven cities and three towns concluded an anti-pollution agreement with the major industries of the respective communities. Regional heating is beginning. It was concluded that the environmental standard which is adequate for the other islands of Japan is not adequate for Hokkaido, where heavy pollution occurs in winter.

12368 APTIC NO. 30094

Abeyta, Oscar R.

PROBLEMS OF AIR POLLUTION AND MEASURES TO COMBAT IT IN EL PASO, TEXAS. *(Contaminacion atmosferica y medidas para combatirla en El Paso, Texas). Text in Spanish. Bol. Ofic. Sanit. Panam., 70(2):181-185, Feb. 1971. (Presented at the Reunion Anual de la Asociacion Fronteriza Mexicana-Estadounidense de Salubridad, 27th, Santa Fe, N. M., June 2-6, 1969.)*

Once chimney smoke was viewed as a sign of economic progress, but today man is conscious of the hazards of these environmental contaminants. The border towns of El Paso, Texas and Ciudad Juarez, Chihuahua, Mexico now have an air pollution problem. A study in El Paso determined that particles, gas fumes produced by motor vehicles, and industrial air pollutants had reached a geometric mean of 125 micrograms/cu m at allsites sampled during a 30-day period. Carbon monoxide was continuously measured and ranged from 0 to 18 ppm. Nitrogen dioxide and ozone were also measured. The State of Texas has already passed several laws and standards for certain contaminants. However, nearby Ciudad Juarez is also effected and has no similar legislation. Since the joint population of the two towns will reach a level of 1.5 million by 1985, it will be necessary to study the problem in Ciudad Juarez. The Joint efforts of both sides may contribute to the improvement of air quality.

12369 APTIC NO. 30031

Alexander, Saramma and S. D. Chatterjee

POSSIBLE CORRELATION BETWEEN ATMOSPHERIC OZONE CONTENT AND COSMIC RAY INTENSITY VARIATIONS. *J. Atmospheric Terrest. Phys., vol. 33:831-833, 1971. 5 refs.*

Variations in the daily mean cosmic ray intensity at Calcutta and the ozone content of the upper atmosphere at a point 15 km distant were studied over a three-month period. There was no linear relationship between the amplitudes of the variations, but there was a tendency for the changes to occur simultaneously and in the same sense, particularly on magnetically undisturbed days. The correlation coefficient between the two sets of data is 0.27.

12370 APTIC NO. 29553

Andre, M.

TESTS OF REPRESENTATIVE SPECIMENS OF CRYSTALLINE SILICA CONTAINED IN THE ATMOSPHERE OF INDUSTRIAL PLANTS. *(Essais de dosages representatifs de la teneur reelle en silica cristallisee dans les atmospheres d usines). Text in French. Lab. Central des Services Chimiques de L Etat, Paris (France) and Inst. National de Securite pour la Prevention des Accidents du Travail et des Maladies Professionnelles, Paris (France), Colloq. Securite Sociale Serv. Prevent., 3rd, Paris, France, 1955, p. 61-67. (Nov. 3-5.)*

In test results showing the quartz content established by known methods of analysis and broken down according to particle sizes, the overriding feature is the lower content of pure quartz in the smaller particle sizes. The largest particles have a larger quartz content than the solid rock from which they originated. One example shows 97% quartz in the rock, 98% in the particles above five microns, 93% in particles one to five microns, and 61% in particles below one micron. Differences in the results of the determination of quartz content by chemical analysis and diffraction are shown; as well as the comparative values obtained from samples taken at or near the floor and from high points in plants. In one set of tests made with samples taken in the molding and core-making departments of a foundry, the quartz content in the samples from high locations averaged 50% higher than from the floor. In the department for cleaning rough castings, the proportion was drastically reversed; the quartz content higher up was about one-fifth of that on the floor. In both groups, from the floor or higher up, the larger particle sizes, above three to five micron, were predominant.

12371 APTIC NO. 30089

Anechina, P., J. M. Romero, B. Sanchez, F. Murias, and J. De la Serna

EVOLUTION OF THE ATMOSPHERIC CONTAMINATION IN MADRID IN 1969. *(Evolucion de la contaminacion atmosferica de Madrid en el ano 1969). Text in Spanish. Rev. San. Hig. (Spain), 44(8):885-907, 1970. 10 refs.*

The atmospheric contamination in Madrid was studied in 1969. Stabilization occurred, with a reduction of higher values and an increase in lower values over previous years. The sulfur dioxide concentration was 186.7 micrograms/cu m per year; the mean maximum concentration per month was 334.9 micrograms/cu m in January; the mean maximum concentration was 740.8 micrograms/ cu m per day; and on 4.33% of the days, the concentration passed 500 micrograms/cu m. The mean smoke concentration per year was 197.8 micrograms/cu m; the mean maximum concentration per month was 347.1 micrograms/cu m in January; the mean maximum concentration per day was 1,263.6 micrograms/cu m in January; the mean maximum concentration per day was 1,263.6 micrograms/cu m; and the concentration was greater than 750 micrograms/cu m on 1.82% of the days. The polycyclic hydrocarbons index showed a mean concentration per year of 261.9 micrograms/cu m; the mean maximum concentration per month was 704.8 micrograms/cu m in January; and the mean maximum concentration per day was 4,087.3 micrograms/cu m. The sedimentable material had the same level as the previous years with an annual mean of 258.8 mg/sq m/day. Also, the 3.4 benzopyrene values were from 1.0 to 2.1 micrograms/per g of sedimentable material and from 0.0 to 9.4 micrograms/per 1.000 cu m of air.

12372 APTIC NO. 29289

Bouquiaux, J. and J. Grandjean

AIR POLLUTION BY SMOKE AND SO2. *(Pollution atmospherique. Fumee at SO2). Text in French. Bull. Mens Inst. Royal Meteorol. Belgique, 28p., Dec. 1969.*

The measured values of smoke and sulfur dioxide respectively, are expressed in micrograms per cubic meter of air, as well as the ratio figures of smoke to SO2, for every day of the month. The readings are grouped by districts, and are listed for each individual point of air sampling. Separate diagrams show smoke and SO2 figures as well as monthly average, maximum, and minimum readings for the districts of Brussels, Liege, Charleroi, Gent, and Antwerp. As an example of actual figures shown for December 1969, smoke in the Brussels district averaged 90 micrograms per cu m of air, with a maximum reading of 526 and a minimum of 15. During the same period Liege had 65 average, 324 maximum, and 2 minimum. The figures for SO2 were: Brussels, 345 micrograms average, 1468 maximum, 57 minimum; Liege, 248 average, 946 maximum, zero minimum. There is a total of 230 stations in Belgium, each of which is equipped for continuous air monitoring, including a diaphragm type pump which sucks in about 2 cu m air per 24 hours. Whatman no. 1 paper filters for retention of SO2 gas absorbing water bottles, and a gas meter. Once a week each station sends 7 sets of filters and bottles to one of the five laboratories for analysis. Daily average values of SO2 and smoke concentrations are determined and then transmitted to the Central Data Processing Station of the Royal Meteorological Institute.

12373 APTIC NO. 29566

Bouquiaux, J. and J. Grandjean

AIR POLLUTION BY SMOKE AND SO2. *(Pollution atmospherique. Fumee et SO2). Text in French. Bull. Mens Inst. Royal Meteorol. Belgique, 28p., March 1970.*

The measured values of smoke and sulfur dioxide respectively, are expressed in micrograms per cubic meter of air, as well as the ratio figures of smoke to SO2, for every day of the month. The readings are grouped by districts, and are listed for each individual point of air sampling. Separate diagrams show smoke and SO2 figures as well as monthly average, maximum, and minimum readings for the districts of Brussels, Liege, Charleroi, Gent, and Antwerp. As an example of actual figures shown for March 1970, smoke in the Brussels district averaged 49 micrograms per cu m of air, with a maximum reading of 263 and a minimum of 5. During the same period, Liege had 37 average, 147 maximum, and 3 minimum. The figures for SO2 were: Brussels: 221 micrograms average, 1035 maximum, 27 minimum; Liege, 158 average, 711 maximum, 22 minimum. There is a total of 230 stations in Belgium, each equipped for continuous air monitoring, including a diaphragm type pump which sucks in about 2 cu m air per 24 hours, Whatman No. 1 paper filters for retention of SO2, gas absorbing water bottles, and a gas meter. Once a week each station sends 7 sets of filters and bottles to one of five laboratories for analysis. Daily average values of SO2 and smoke concentrations are determined, and then transmitted to the Central Data Processing Station of the Royal Meteorological Institute.

12374 APTIC NO. 29883

Fayed, M. E. S., M. A. Saleh, and L. Otten

A STUDY OF AIR POLLUTION AROUND A SULPHURIC ACID PLANT. *J. Inst. Fuel (London), 44(362):143-148, March 1971. 15 refs.*

An air pollution study was conducted at a sulfuric acid plant situated near Abou-Zaabal, Egypt, using the lead peroxide method for long-term observations and the iodine titrimetric method for rapid concentration measurements. The observed average sulfur dioxide concentration of 5 ppm was much higher than that near power plants and steel mills. The influence of factors such as the emitted concentration, wind direction, and speed, is shown by the concentration contours drawn around the plant. The pollution can be reduced by increasing the stack height from 20 m to 40 m and passing the flue gases through a scrubber and mist precipitator before releasing them to the atmosphere. The weak acid zone is probably the greatest source of pollution, when the superphosphate unit is not in production the weak acid is discharged into an open drain. Improvement may be possible by enclosing the weak acid clarifier and covering the drains with lead coated covers. Also, the weak acid may be neutralized by the lime-neutralization process. Preventive maintenance should take place as often as is economically possible to prevent the occurrence of leaks due to the corrosiveness of materials.

12375 APTIC NO. 29853

Fujie, Kimiko

SUSPENDED PARTICULATES IN OSAKA CITY. *(Osaka niokeru high-volume air sampler niyoru fuyi funjin soketei kekka no kaiseki (dai 1 po)). Text in Japanese. Taiki Osen Kenkyu (J. Japan Soc. Air Pollution), 5(2):290-293, April 1971. 3 refs.*

Suspended particulates were sampled by high volume air samplers at six sites in Osaka City. The results of these measurements are statistically analyzed. The concentrations of suspended particulates, sulfates and benzene-soluble organic substances collected from 1966 to 1969 are logarithmically distributed. In an industrial area, the mean concentrations of suspended particulates and sulfates were 404 micrograms/cu m and 35.4 micrograms/cu m, respectively. Correlations between the concentrations of suspended particulates and sulfates, nitrates, and benzene-soluble organic substances were also analyzed.

12376 APTIC NO. 29647

Fukuoka, Saburo

LEAD POLLUTION AND PHOTO-CHEMICAL SMOG IN TOKYO. *(Tokyoto ni okeru namari kogai oyobi kokagaku sumoggu ni tsuite). Text in Japanese. Jidosha Gijutsu (J. Soc. Automot. Engrs. (Japan), 25(3):290-297, March 1971. 9 refs.*

A survey of the concentration of lead compounds in the atmosphere of urban communities of Tokyo from September 1969 to March 1970 at locations showed a concentration extending from 1.22 to 3.15 micrograms/cu m recorded near Setagaya and Koto respectively. The average concentration of lead at and around 10 intersections, extends from 1.4 to 4.7 micrograms/cu m. The concentration recorded at daytime is higher than at night. The concentration measured at four corners of an intersection is higher not only of that measured at an area near the roadway leading to the intersection but also that measured at an interior area away from the corner. The relation between the concentration of lead and carbon monoxide was a reciprocity coefficient of 0.668 to 0.7. Since decreasing lead in gasoline is urgent because of its harmful effects upon the human body, it was decided that gasoline containing over 1.1 ml/gal would not be put on the market after August 1970. Ultraviolet volume of lead is four times as much in the summer as in the winter. The summer is a rainy season in Japan; therefore the ultraviolet volume is higher than any other season. The continuous measurement of oxidant reveals that there were about 10 days on which the oxidant concentration was more than 0.15 ppm/hour within a three-year period beginning in 1967.

12377 APTIC NO. 29912

Fuller, H. I.

CLEANER AIR IN LONDON. *Petrol. Rev., 25(290):63-66, 75, Feb. 1971.*

The Clean Air Act of 1956 set limits on the emission of smoke from both domestic and industrial fuel usage and gave local authorities power to require adequately tall chimneys for furnaces in new installations and also power to set up smoke control areas. For over 10 years, progress made under the Act has been assessed through nationwide 24-hr measurements of sulfur dioxide and smoke. Measurements made in Greater London show a 20% decrease in ground-level concentrations of sulfur dioxide for all areas except central London, where rise in fuel consumption appears to have offset the decrease in fuel sulfur content. In the winter of 1968-1969, average concentrations in the central area were around 350 microgram/cu m compared with the 100-150 microgram/cu m level achieved in some outer areas and with the 200-250 microgram/cu m level achieved in other outer areas of London. Similarly, smoke measurements are higher for central London than for outer areas, where smoke has largely been brought under control. Some of the difference may be due to vehicle smoke, for nearly 80% of the relevant premises in London come within a smoke control area. Even in central London, winter sunshine is some 50% above the long-term average before 1960. Also, it is no longer possible to demonstrate a correlation between air pollution and acute bronchitis.

12378 APTIC NO. 29655

Giever, Paul M. and W. E. Ruch

STATISTICAL ANALYSES OF AIR POLLUTION SAMPLING FREQUENCY IN AN EPIDEMIOLOGIC STUDY. *Am. Ind. Hyg. Assoc. J., 32(4):260-266, April 1971. 6 refs.*

A five year air pollution profile of particulate and gaseous contaminants was obtained for the area of the Tecumseh Community Health Study, a comprehensive longitudinal study of the health of the entire population in this area. Data on the solid particulate matter were collected and analyzed for total weight and for metallic ions present in sufficient concentration to be determined by the emission spectrograph. A special period of study for airborne lead was also conducted. Although the major source of contamination is considered to be the automobile, equipment for that type of analysis was not available. Using the analytical instrument that was available, carbon monoxide was evaluated over an extended period. The evaluation of data collected over a period of five years served to establish the threshold of contamination in the atmosphere for future comparisons of changing pollution concentrations. A four year period of bimonthly sampling of particulate matter was conducted and the analyses of these data showed that this type of information would provide accurate data on yearly pollution levels. (Author conclusions modified)

12379 APTIC NO. 29522

Gilbert, O. L.

A BIOLOGICAL SCALE FOR THE ESTIMATION OF SULPHUR DIOXIDE POLLUTION. *New Phytol., 69(3):629-634, 1970. 8 refs.*

By observing the distribution of lichens and bryophytes in an area where sulfur dioxide levels are well known, it has been possible to produce a scale from which annual average SO2 levels can be estimated. Acid stonework, the boles of vertical deciduous trees, and old asbestos roofs are the most suitable habitats to examine for indicator species. If possible, several examples of each habitat should be examined before attempting to assess the SO2 level characteristic of a locality. At their inner limit, most species are sterile, compact, and colonies tend to be small and have a low cover. Short turf and small cushion forming bryophytes and fruticose lichens respond to decreasing pollution by a massive increase in luxuriance. A brief description of the plant communities mentioned in the scale is given. Several applications for use of the scale are also discussed.

12380 APTIC NO. 29257

Hall, D. A. and G. R. Nellist

ATMOSPHERIC POLLUTION AT MODERN COKE WORKS. *Coke Oven Managers Yearbook, 1964, p. 96-114. 8 refs. (Presented before the Coke Oven Managers Association Northern Section, Nov. 1962.)*

Measurements of general atmospheric pollution in the vicinity of three modern coke works are presented. These show that the total solids deposition is much less than in industrial regions and similar to that in an urban area such as Newcastle. The amount of the deposition is only about the same as has been suggested as resonable by a number of authorities. The special problem of grit and drizzle deposition from the quenching tower was studied, and the effect of the installation of wooden baffles at one coke works measured. The results show that the baffles greatly reduce the emission of drizzle but make only a small difference in total emission of solid material, e.g., fine dust. In addition, the eliminators cause coagulation of water droplets and, to a lesser extent, grit, which results in both materials being precipitated nearer to the quenching tower than previously. (Author abstract modified)

12381 APTIC NO. 29794

Hanejima Masayuki, Katsutada Kanno, and Yoko Nakamura

A REPORT OF THE PERIODIC MEASUREMENT OF SOOT AND DUST, AND SULFUR OXIDES IN THE AIR AROUND THE HOSPITAL. *(Toin shuhen ni okeru baijin to iosankabutsu no teikiteki sokutei no kekka hokoku). Text in Japanese. Tetsudo Yakugaku Kenkyu Nenpo, no. 18:13-20, 1970. (Presented at the Tetsudo Yakugaku Kenkyukai Meeting, 18th, Sapporo, Japan, July 30, 1970.)*

Suspended particulates and sulfur oxides were measured on the roof of the Morioka Railways Hospital. The quantity of dustfall, measured by deposit gauge, decreased continuously from 1964 (about 12 t/sq km/month) to 1970 (about 7t/sq km/month), suggesting some correlation with the quantity of coal consumed by the National Railways, which is decreasing its use of steam locomotives. Sulfur oxides concentration, measured by the lead peroxide method, is under 0.25 mg. Consequently, air pollution from sulfur oxides seems lessened, although concentrations increased with the 1970 opening of an automobile by-pass. Measurement of suspended particulates by high-volume air sampler showed blacker atmospheric dust and soot at the hospital than at other measuring points in Morioka city, indicating that the hospital receives significant pollution from the National Railways engines.

12382 APTIC NO. 29515

Hellwig, A. and H.-D. Schulze

STUDY OF THE SUSPENDED PARTICULATES AND LEAD CONCENTRATION IN THE AIR WITHIN THE CITY LIMITS OF MAGDEBURG. *(Untersuchungen ueber den Schwebstaub- und Bleigehalt der Luft im Stadtgebiet Magdeburg. Text in German. Z. Ges. Hyg. Grenzg. (Berlin), 17(2):101-106, 1971. 20 refs.*

Atmospheric dust and lead concentrations were measured at four crucial points in Magdeburg. The sampling probe was a brass head with a membrane filter. Suspended dust was measured gravimetrically, lead concentrations were colorimetrically determined by the dithizone method. While little dust and hardly any lead were measured in a suburban residential area, a close connection between both pollutants and traffic density was observed. At a busy thoroughfare in downtown Magdeburg (3000 passenger cars/hr), the annual average dust concentration was 0.47 mg/cu m and the annual average lead concentrations 2.92 micrograms/cu m. The tolerance limits of 0.50 mg/cu m dust and 0.7 micrograms/cu m lead were exceeded 35% and 92% of the time. In the newly created city center, (0.20 mg/cu m dust, 0.69 micrograms/cu m lead) annual average concentrations remained below the maximum allowable concentrations.

12383 APTIC NO. 29518

Himi, Yasuji

A STUDY ON THE ESTIMATION OF THE REGIONAL CENTRAL VALUE OF AIR POLLUTION FROM OBSERVED VALUES. *(Taiki osen sokutei kekka yorino sono chiiki daihyochi no suitei ni kansuru ichi kosatsu). Text in Japanese. Preprint, Safety Engineering Assoc., Tokyo (Japan), p. 90-93, 1970. (Presented at the Safety Engineerin Conference, 3rd, Japan, Dec. 9-10, 1970, Paper 20.)*

Regional central values of pollutants are conventionally derived from the arithmetic mean of observed values at area monitoring points. The obtained values are highly dependent on the number of the observation points and their location. To obtain a more realistic mean, the pollutant distribution function was estimated from observed values and the central value was calculated from the distribution function. In Kawasaki-Yokohama, deposit gauge measurements showed that dust distribution was inversely proportional to the distance from the industrial center. By integrating the total amount of deposits was obtained. The regional central value of deposited dust calculated by the present method was approximately linearly proportional to the conventional arithmetic mean; the former was a little lower than the latter. Airborne particulates, on the other hand, were inversely proportional to the distance from the industrial center and an exponential function of height.

The relationship between the regional central values of airborne particulates obtained by the two methods was also studied.

12384 APTIC NO. 30025

Ishinishi, S. and N. Shigemori

SEASONAL VARIATION OF THE CONCENTRATION OF HEAVY METALS IN SUSPENDED DUST ON THE MAIN STREETS. *(Kosaten fuyujin chu jukinzokuryo no kisetsuteki hendo). Text in Japanese. Nippon Eiseigaku Zasshi (Japan J. Hyg.), 26(1):135, April 1971. (Presented at the Japanese Society for Hygiene, Annual Meeting, 41st, Tokyo, April 3-4, 1971.)*

An analysis of lead, iron manganese, and cadmium in suspended dust was made at two main street intersections in Kitakyushu (an industrial town) and in Fukuoka (a commercial town) from May 1966 to March 1970. The suspended dust was collected by a high volume air sampler. The mean values of metal composition for 4 years were as follows: in Kitakyushu, Pb, 2.91 4.68 micrograms/sq m; Fe, 45.3 78.9 micrograms/sq m; Mn, 2.05 - 1.91 micrograms/sq m; and Cd, 0.131 0.141 micrograms/sq m; in Fukuoka, Pb, 3.58 3.74 micrograms/sq m; Fe, 53.1 - 58.6 micrograms/sq m; Mn, 1.22 1.61 micrograms/sq m; and Cd, 0.131 0.153 micrograms/sq m. Lead showed a tendency to increase in the fall and winter. The correlation between Fe and Mn was fairly significant but that between Fe and Pb was slightly significant at only two points. No correlation was found between Fe and Cd.

12385 APTIC NO. 29569

Just, Jan, Stefan Maziarka, and Halina Wyschinska

BENZPYRENE AND OTHER AROMATIC HYDROCARBONS IN THE DUST OF POLISH TOWNS. *(Benzpyren und andere Kohlenwasserstoffe im Staub polnischer Staedte). Text in German. Wiss. Z. Humboldt Univ. Berlin Math. Naturw. Reihe, 19(5):513-515, 1970.*

The concentration of polycyclic unsaturated hydrocarbons was measured in ten large towns during a two-year period. In each town, dust samples were obtained with a STAPLEX high volume air sampler using glass fiber filters. The dust accumulation in the filters was extracted by benzol and analyzed by spectrophotometry to determine the concentration of benzo-(a)-pyrene, benzo-(e)- pyrene, benzo-(g,h,i)-pyrene, and pyrene. The highest recorded concentrations, all from the town of Zabrze, were: 3,4-benzpyrene, 133 micrograms per 1000 cu m of air; 1,2-benzpyrene, 80 micrograms; 1,12-benzperylene, 125 micrograms; and pyrene, 167 micrograms per cu m. Unexpectedly, the next highest figures came from the port city of Gdansk which has otherwise a comparatively low level of dust and tar concentrations in the air. Towns with highly developed metallurgical, coal processing, gas generating, and power generating industries were found to have substantial air pollution by tar substances.

12386 APTIC NO. 29545

King, E.

INTERPRETATION OF RESULTS OF EXAMINATION OF AIR. *(Interpretations des resultats de prelevements d atmosphere). Text in French. Lab. Central des Services Chimiques de L Etat, Paris (France) and Inst. National de Securite pour la Prevention des Accidents du Travail et des Maladies Professionnelles, Paris (France), Colloq. Securite Sociale Serv. Prevent., 3rd, Paris, France, 1955, p. 27-33. 7 refs. (Nov. 3-5.)*

Caution is required in interpreting individual readings of pollutant concentrations in manufacturing shops. Three graphs represent variations in the atmospheric mercury vapor concentration measured between 10 am and 5 pm in a repair shop where small quantities of mercury are used. In the first case, small concentrations were recorded up to 2 pm, apparently due to little repair work being done. In the afternoon the concentration of the pollutant rose to a peak value of 400 micrograms of mercury per cu m of air, compared to an average of 100 micrograms in the morning. A second case under comparable conditions, shows the effect of opening and closing a small window. The third case reflects the conditions in a similar shop, equipped with force air ventilation, where Hg pollution unexpectedly occurred at higher rates than with plain window ventilation. In another case involving chronic intoxication by cadmium in a shop which produces a copper-cadmium alloy, the relative skill of the furnace operator was responsible for variations in the atmospheric concentration of cadmium oxide. The emission of fumes from the furnace was usually restricted to about 10 minutes per hour. A thermal precipitator was used, supplemented by apparatus with a soluble filter for finding the average dust concentration per shift. Another device for continuous recording incorporates a filter paper band transported at constant speed under an orifice through which the air streams and then passes through the filter. Subsequent visual inspection of the filter permits the approximate interpretation of the relative variations as a function of the time of the day and of the workers activities.

12387 APTIC NO. 29744

Kobayashi, Yoshitaka

URBAN POLLUTION BY AUTOMOBILE EXHAUST GAS. *(Jidosha hai-gasu ni yoru toshi osen). Text in Japanese. Preprint. Association of Safety Engineering, Yokohama (Japan), 22p., 1970. (Presented at the Association of Safety Engineering Seminar, 17th, Yokohama, Japan, Feb. 1970.)*

The toxicity of carbon monoxide and lead in exhaust gas is described. In urban areas, the CO concentration is very high on busy roads. Pollutants in the atmosphere can be classified into four groups; sulfur dioxide, nitrogen dioxide, CO and nitric oxide, and ozone, each having a different pollution pattern. The CO concentration around the highways averages 3-6 ppm annually, but sometimes the hourly figure reaches 40-50 ppm. In the center of town, 10 ppm CO an hour appears 27% of the total hours a year. In such cities as Osaka and Tokyo, when the wind velocity is less than 0.5-1 m/sec, a high concentration is seen even in the areas away from highways. In winter, the CO concentration averages 5-6 ppm monthly even in the hinterland. Near highways, the NO concentration is 2-3 times higher than that of NO2, about 0.05-0.25 ppm monthly. The concentration of NO2 is very often less than 0.01-0.05 ppm monthly. In the hinterland area, NO is higher in winter about 0.01-0.05 ppm monthly. Carbon monoxide, NO and hydrocarbon levels around highways are low in the morning and high in the afternoon. Lead compounds along the highways measure 3-9 micrograms/cu m and 0.7-5 micrograms/cu m in the hinterland. Photochemical smog is explained. The non-dispersive infrared analyzer, the detecting tube method, oxidized mercury method, gas chromatography, and I2O5 method are described for measuring pollutants. Such purification methods as slow adjustment, purification equipment, and change in engine models are explained. New cars are to emit less than 3% CO, for over 361 ml gasoline type of cars. The CO concentration in the atmosphere is to be less than 20 ppm an hour for eight continuous hours, or less than

10 ppm an hour for 24 continuous hours. The present total of 13 monitoring stations will be increased to 20 along the highways. Overall improvement in the traffic situation must take place and unnecessary idling and acceleration, must be drastically decreased by making the flow of vehicles smooth, widening the roads and providing freeways.

12388 APTIC NO. 29918

Kobayashi, Yoshitaka, Hori Masahiro, and Kenzaburo Tsuchiya

DISTRIBUTION OF LEAD IN THE AIR NEAR CITY ROADS.

20p., 1970 (?). 10 refs.

Results are presented for measurements of airborne lead at various points along a main road in Yokohama. Sampling with a high-volume sampler was conducted every 24-73 hrs from November 1967 to October 1968. Analysis was by high-frequency polarography. Lead concentrations decreased remarkably with distance from the road up to 100 m, but were constant beyond that point. The vertical distribution of lead concentrations at a site 100 m from the road was almost constant at 1.1-1.3 microgram/cu m up to 20 m above ground. There was a correlation between lead concentrations in the vicinity of the road and the number of vehicles passing by; the former showed two peaks, one at 7:00 am and the other at 6:00 pm. Hourly variations were greatest at sites near the road. The highest value of the average diurnal concentrations of lead at 100 m from the road was 3.3 g/cu m; the lowest was 0.1 g/cu m. The former was obtained in December, when there was little rainfall, and the latter in summer, when there was much rain.

12389 APTIC NO. 30075

Nishida, Konosuke, Takashi Suzuka, and Tsuneo Honda

STUDIES ON AIR POLLUTION DUE TO AUTOMOBILE EXHAUST. REPORT 15: AIR POLLUTION AT THE VICINITY OF BOOTHS IN MEISHIN HIGHWAY.

(Jidosha haiki ni yoru taikiosen no kenkyu. (Dai 15 ho) Kosokudoro no ryokin shunosho fukin no jittai). Text in Japanese. Nippon Eiseigaku Zasshi (Japan J. Hyg.), 26(1):133, April 1971. (Presented at the Japanese Society for Hygiene, Annual Meeting, 41st, Tokyo, Japan, April 3-4, 1971.)

Investigations on air pollution were carried out at four points along the Meishin Highway. Between 25 and 525 cars passed per hour, with peaks between 9 am and 5-6 pm. Wind velocity was 0-7.2 m/sec, with a calm condition of below 0.2 m/sec prevailing 52.4 75.6% of the time. At times, the level of carbon monoxide/ min in booths exceeded 50 ppm, but the level/hr was 0.1-12.1 ppm. Levels of floating dust, nitric oxide, nitrogen dioxide, and sulfur dioxide in the air outside the booths were 0.6-2.6 mg/cu m, 10 - 100 ppm, two-10 ppm, and three-8 ppm, respectively. The levels of floating dust were about the same as those in the air of highly polluted cities. Thus, air pollution in the vicinity of and in booths is about the same as in the vicinity of roads in cities where traffic volume is 1000 2000/hr. Therefore, CO levels in the booths should be reduced to one-tenth their present levels and fresh air free of auto exhaust would effectively dilute and ventilate the air in booths. The study also showed that the most effective points for sampling air for ventilation are 16 m above the ground or higher.

12390 APTIC NO. 29895

Ogata, Masana, Katsumaro Tomokuni, Ko Hitomi, and Takeshi Ichikawa

ON AIR POLLUTION IN MIZUSHIMA AREA.

(Mizushima chiku taikiosen ni tsuite). Text in Japanese. In: An outline of countermeasures against public nuisance in Kurashiki city. (Kurashiki-shi ni okeru kogai taisaku no gaiyo). Kurashiki Municipal Office (Japan), Chapt. 6 - (9), p. 111-120, Dec. 1968.

The air pollution in the Mizushima industrial area of Kurashiki city, Okayama prefecture was surveyed from march 1967 to February 1968. The British standard smoke and dust meter for estimating falling dust and soot was used, as well as the lead peroxide method for estimating sulfur dioxide, alkali filter paper for nitrogen dioxide, and the orthophenanthrolene method for estimating of iron in falling soot and dust. For sulfur dioxide, the maximum occurred during April and August in the northeastern part of the Mizushima area due to a south wind, and during September and February, in the Kojima area due to a west wind. In autumn and winter, a high concentration found in an old urban area of Kurashiki seemed to be caused by heating systems. A rather good correlation of 0.72 was evident between the amounts of sulfur dioxide and nitrogen dioxide in the Mizushima area. The falling dust and soot were estimated at 2 sites; the highest values were indicated in July: 29.968 tons/sq km/month and 18.196 tons/sq km/month respectively. The maximum amount of iron in settling dust and soot was 0.079 tons/sq km/month.

12391 APTIC NO. 29482

Okita, Toshiichi, Masao Watanabe, and Shigeru Kiyono

ANALYSIS OF HC OF LOW GRADE IN ATMOSPHERE.

(Taiki chu no teikyu tanka suiso no bunseki). Text in Japanese. Japan Chemical Society Tokyo, 1p., 1971. (Presented at the Japan Chemical Society Annual Meeting, 24th, Tokyo, March 1971, Paper 3407.)

The presence of hydrocarbons in the air caused by photochemical reactions has become a problem. Qualitative and quantitative analyses were made by gas chromatography using 100-200 ml samples of lower grade hydrocarbons in the air. All the lower grade HC (less than C6), ethane, ethylene, and acetylene (C2) were analyzed under separate analytical conditions and columns. For the analysis of HC with less than C6, a one eighth inch, 36 foot column, stainless tube was filled with Dimethyl sulforane 10%, and as carrier, Celite 545. A two foot column was filled with 10% Carbowax 600. The column temperature was put near 0 C by immersing the column in the big Jewer jar, filled with ice. The carrier gas was nitrogen, at 20 ml/min flow. The detector was FID. For the analysis of C2, Porapak N was poured into a 24 foot column, and the temperature of the column was made 60 C. Using liquid oxygen, the sample gas was condensed and introduced into the gas chromatograph. From each bomb, 1-5 ml of pure gas was taken into separate gas pipettes, and diluted by stages, with 2 l and 118 l dilution jars to make a low concentration mixed standard gas of a few dozen ppb, the amount of gas to be introduced into the gas chromatograph was changed, and the concentration of the gas itself was changed. All through the 30 hours, the quantitative change was around 400%, and in the mountainous area, the concentration was less than a few ppb. At Tokyo Tower, a comparison was made between 250 m height, 150 m height, and the ground level. As height increased, the concentration decreased. When there was very little wind, the ratio was about 50%. The gas chromatography of 200 ml of gas taken on the roof of the National Public Hygiene

Institute (about 25 m high), on a fine day, with no wind, at 14:30 hours, November 25, 1970 showed ethane, ethylene, propane, propylene, isobutane, n-butane, acetylene, 1-butane, iso-butane, trans-2-butane, isopentane, n-pentane, methylacetylene, 2-methylpentane, 3-methylpentane, and n-hexane with varying concentrations.

12392 APTIC NO. 29812

Stanley, Charles W., James E. Barney, II, Michael R. Helton, and Anne R. Yobs

MEASUREMENT OF ATMOSPHERIC LEVELS OF PESTICIDES. *Environ. Sci. Technol., 5(5):430-435, May 1971. 8 refs.*

In a pilot study to establish a system for measuring the extent of atmospheric contamination by pesticides, air samples from nine localities in the U. S. were analyzed for 19 pesticides and metabolites. Four sampling sites were each selected in Baltimore, Md.; Buffalo, N. Y.; Dothan, Ala.; Fresno, Calif; Iowa City, Iowa; Orlando, Fla; Riverside, Calif; Salt Lake City, Utah; and Stoneville, Miss. The sites were representative of both urban and agricultural areas. The levels of pesticides found in ambient air were almost entirely far below levels that might add to the total human intake of pesticides. Detected levels varied from a low of 0.1 ng of pesticide/cu m of air to a high 2520 ng/cu m. Kinds and levels of pesticides changed with time, higher levels being found during the summer at all locations except Orlando. Only DDT was detected at all localities, while organophosphate pesticides were found only at Dothan, Orlando, and Stoneville. (Author abstract modified)

12393 APTIC NO. 29462

Takada, Susumu, Tsuyoo Yamamoto, and Konosuke Nishida

DETERMINATION OF POLYNUCLEAR AROMATICS IN SUSPENDED PARTICLES. *(Funjinchu no takanhokozokukagobutsu ni tsuite). Text in Japanese. Nippon Eiseigaku Zasshi (Jap. J. Hyg.), 26(1):147, April 1971. (Presented at the Japanese Society for Hygiene, Annual Meeting, 41st, Tokyo, Japan, April 3-4, 1971.)*

Measurments were performed to determine the concentration of eight kinds of polycyclic aromatic hydrocarbons (PAHC) in the dust in the air in Kyoto City during the winter, according to the diameter of the particulate matter, and the level of PAHC in soot according to the type of chimneys. Analysis was by gas chromatography from a tar component extracted from dust and soot with benzene. No significant differences in PAHC levels were found in samples taken with a cyclone equipped hi-vol sampler. Much higher levels of PAHC were found in smaller size dust, the concentration in particles about 7 micron or above was 103 micrograms/g while particles 2 micron or less showed 1009 micron/g. In chimneys high levels of PAHC were found when coal or powdered coal was used. The level of PAHC in soot varied with the different kinds of the chimneys. The origin of PAHC was greatly affected by the construction of the chimneys or the combustion system.

12394 APTIC NO. 29868

Varkonyi, Tibor

REGISTRATION OF THE SULPHUR DIOXIDE CONTENT OF THE AIR IN BUDAPEST. *(A levego kendioxid tartalmanak regisztralasa Budapesten). Text in Hungarian. Egezsegtudomany, vol. 15: 40-51, April 1971. 17 refs.*

The sulfur dioxide concentration in the air of Budapest was measured with a registration apparatus. The average concentration was 0.72 mg/cu m in the winter and 0.26 mg/cu m in the remaining months of the year. On Sundays and holidays the values were 40 percent lower. The concentration showed a diurnal variation, being highest in the morning and lowest in the afternoon. The highest 10-min mean values were 5.0 mg/cu m in winter and 1.8 mg/cu m in summer. The greatest amounts of SO2 are represented by the winter concentration of 0.6 to 1.2 mg/cu m. The higher the wind speed, the lower is the SO2 concentration. An analysis based on wind direction clearly showed that the pollutant was emitted in industrial areas. Concentrations above 250 mg/cu m occurred as a result of the emissions and unfavorable meteorological conditions. (Author summary modified)

12395 APTIC NO. 29637

Voros-Felkai, Gyorgyi

INCIDENCE OF RHODOTORULA SPECIES IN URBAN AIR. *Acta Microbiol. Acad. Sci. Hung. (Budapest), 13(1):53-58, 1966. 24 refs.*

From April 1964 to August 1965 Rhodotorula yeast colonies were collected in petri dishes exposed, for 15 min twice a day, on the roof of a 20-m high building in Budapest. Over 100 Rhodotorula strains representing 12 species were isolated. Of the isolates, 34% belonged to Rh glutinis, 26% to Rh mucilaginosa, 16% to Rh rubra, and 11% to Rh minuta. Physiolgical and morphological properties of the species are tabulated. No seasonal difference in the distribution of the species was found. Results of the investigation indicate that air microflora should be include in the search for sources of human mycoses.

12396 APTIC NO. 30076

Wada, Akio, Ito Eiichi, Kiyoshi Kubo, and Masaru Kitase

THE TENDENCY OF AIR POLLUTION AT NAGOYA CITY OBSERVED FROM THE WEIGHT OF FALLING DUST. *(Kokabaijin kara mita Nagoya-shi taikiosen no keiko). Text in Japanese. Nagoya-shi Eisei Kenkyushoho (Ann. Rept. Nagoya City Health Res. Inst.), no. 16:123-128, 1969. 3 refs.*

From 1960 to 1969, the amounts of falling dust and soluble and insoluble matter in falling dust were examined, according to the standard advised by the Air Pollution Control Association at a number of points in Nagoya. Dusts from four points in an industrial area, four points in a commercial area, and five points in a residential area were measured once a month with a deposit gauge. Falling dust gross weight declined from a high of 14.94 t/k sq m in 1962 to 8.3 t/k sq m in 1968. Insoluble matter showed the same trend; its percentage to gross weight was 78% in 1960 and 65% in 1968. Soluble matter did not show any remarkable change, and its percentage increased from 21% in 1960 to 32% in 1969. During the measurement period, the use of petroleum compared with coal increased yearly, which explains the decrease of falling dust. The data on falling dust were statistically processed for the whole city, with Minato-ku representing the industrial area., Nishi-ku representing the commercial area, and Chikusa-ku representing the residential area, and the respective reliability limits were calculated. The t-examination of 1964 and 1969 data, showed a significant difference; whole city 4.29, Minato-ku 2.93, Nishi-ku 4.99, Chikusa-ku 2.41 (t equals 2.1, alpha equals 0.05, n equals 24). In this survey, the amount of rainfall was always proportional to the falling dust weight, the coefficient of correlation (1965 1969) being above 0.5.

12397 APTIC NO. 29576

Yamate, Noboru

AIR POLLUTION BY EXHAUST GAS II. DETERMINATION OF LEAD AND CARBON MONOXIDE INSIDE A GARAGE AND A REPAIR FACTORY IN TOKYO CITY. *(Jidosha nado no naimenkikan no haiki gasu niyoru kuki-osen ni tsuite). Text in Japanese. Eisei Shikensho Hokoku (Bull. Natl. Inst. Hyg. Sci., Tokyo), vol. 77:15-18, 1959. 1 ref.*

The amounts of lead and carbon monoxide in the air were measured at several garages and repair shops in Tokyo. Samples were collected inside these buildings at various time of the day. The average concentration of lead was 13.6 gamma/cu m, ranging from 175.5 to 1.3 gamma/cu m; carbon monoxide was 18 ppm, ranging from 38 to 4 ppm.

12398 APTIC NO. 30090

Yocom, John E., William L. Clink, and William A. Cote

INDOOR/OUTDOOR AIR QUALITY RELATIONSHIPS. *(J. Air Pollution Control Assoc., 21(5):251-259, May 1971. 6 refs. (Presented at the Air Pollution Control Association, Annual Meeting, 63rd, St. Louis, Mo., June 14-19, 1970.)*

Air quality data were gathered for suspended particulates, soiling particulates, carbon monoxide, and sulfur dioxide inside and outside three pairs of structures for different seasons of the year. The structures were public buildings, office buildings, and private homes. Two self-contained and portable instrument packages were constructed for the measurement program. The major components of each trailer package were a central vacuum pump for drawing air samples through particulate collection filters, four paper-tape soiling samplers, a conductimetric analyzer for sulfur dioxide, an infrared analyzer for carbon monoxide, a master control unit, and supporting apparatus to make the trailer self-contained. Each pair of buildings was sampled simultaneously for a two-week period. Four sampling points were selected at each structure; two outside, two inside. Suspended particulate samples were collected for 12-hr day and night periods, soiling particulate samples for 2-hr periods, and gaseous samples for 5-min periods. The results show the ease of penetration of particulates into private homes and the removal ability of air conditioning systems. Outdoor daily activity greatly influences particulate levels and carbon monoxide levels. Internal generation of pollutants was a significant factor in measured interior concentrations of some of the structures sampled. (Author abstract modified)

12399 APTIC NO. 29814

Yoneyama, Etsuo, Y. Endo, T. Kawamura, T. Fukushima, T. Ohno, K. Saruta, K. Ohmori, and S. Yamaga

LEAD CONCENTRATION IN YOKOHAMA AIR. *(Kukichu no namari nodo). Text in Japanese. Taiki Osen Kenkyu (J. Japan Soc. Air Pollution), 5(1):65, 1970. (Presented at the Japan Society of Air Pollution, Annual Meeting, 11th, Japan, 1970.)*

The lead concentration at busy streets in Yokohama was determined from March 1966 to June 1970 by means of polarography with nitric acid extracts from collected dust. The concentrations varied from a trace amount to 11.76 microg/cu m in proportion to the traffic. These values decreased on rainy and windy days.

12400 APTIC NO. 29586

Zamfirescu, M. and I. Ardelean

THE 3,4-BENZPYRENE CONTENT OF THE AIR IN TWO INDUSTRIAL AREAS. *(Der 3,4-Benzpyren-Gehalt in der Luft von zwei Industriegebieten). Text in German. Wiss. Z. Humboldt Univ. Berlin Math. Naturw. Reihe, 19(5):509-511, 1970. 5 refs.*

Two industrial areas were tested for atmospheric benzpyrene concentration over a period of 12 months in approximately ten intervals. In area A, pollution is caused by heating and by the local industry which uses coal exclusively as fuel. The area part of a narrow valley, surrounded by relatively high mountains; the test period included a long winter, dry spring, mostly southerly winds, and low clouds. Area B has tar distillation plants and coke oven batteries. It lies in an open valley with predominantly northeast winds. Polluted air was drawn through a paper filter placed in a funnel; the material retained on the filters was extracted by benzol and analyzed by thin-layer chromatography. Sampling points in area A were located in inhabited areas. The maximum recorded benzpyrene concentration of 0.11 micrograms per cu m air occurred in winter and was thus strongly influenced by air pollution due to domestic coal. In area B the maximum value of benzpyrene concentration of 5.5 micrograms per cu m was found close to a tar distillation plant in a winter month. The lowest value from the same test point, but taken in spring, was 0.7 micrograms per cu m. Considerably lower concentrations were found from test points at a greater distance from the tar distillation plants and coke oven batteries.

ATMOSPHERIC INTERACTION

12401 APTIC NO. 29795

APCS Association (Japan)

AIR POLLUTION CONTROL SYSTEM (3). *(Taiki osen boshi notameno yosoku sisutemu ni tsuite, chukan hokoku (sono 3)). Text in Japanese. Kogai (Hakua Shobo) (Pollution Control), 6(1):25-30, Jan. 1971.*

An air pollution estimation system is described which simulates various diffusion phenomena and which also functions as a bank for the storage and processing of fundamental data on pollution. The stored data are classified by experimental conditions: smoke source, weather conditions, topographical conditions, distribution of wind speed and direction, and diffusion parameters. Questionnaires from smoke sources are punched as the input data cards, which are also used for administrative data. The output includes the maximum dilution rate, estimated maximum concentration and distances for the work unit, contamination loading at highly polluted points, and its dispersion for an area unit. An example of an input and output sheet is given.

12402 APTIC NO. 29960

Government Mechanical Lab. (Japan), Dept. of Motor Vehicle Safety and Pollution

PHOTOCHEMICAL REACTIONS OF MOTOR VEHICLE EXHAUST GASES. *(Jidosha haiki gasu no kokagaku hanno). Text in Japanese. Kikaishi Nyusu (Govt. Mech. Lab. News), no.12:1-3, Dec. 1970.*

The mechanism of the photochemical formation of formaldehyde, which contributes to exhaust odor and is responsible for eye irritation was using a studied smog chamber. Formaldehyde was analyzed by a colorimetric method, used with a photoelectric spectrophotometer which was improved from the pararosaniline method. Experiments on the photochemical reaction between nitrogen monoxide, ethylene, and propylene showed that the concentration of formaldehyde produced in such reactions is influenced more by the concentration of hydrocarbons than by the nitrogen oxides. This tendency is stronger for propylene than for ethylene, because propylene has a higher photochemical reactivity. Experimental data on the photochemical reactions of motor vehicle exhaust gases show that the formaldehyde concentration produced in the photochemical reaction increases as the temperature rises, which agrees with the fact that the concentration of oxidants in the atmosphere increases as the temperature rises, for example in the summer.

12403 APTIC NO. 29986

TOWARD A RATIONAL POWER POLICY: RECONCILING NEEDS FOR ENERGY AND ENVIRONMENTAL PROTECTION. *New York City Environmental Protection Administration, 293p., April 1971. 200 refs.*

The Environmental Protection Administration of the City of New York became involved in the issue of power siting in May of 1970 when the Mayor presented the question to his Interdepartmental Committee on Public Utilities of approving the construction of a 1600 megawatt, fossil-fueled power plant by the Consolidated Edison Company at Astoria, Queens. Following the Con Edison-Astoria debate, the Environmental Protection Administration undertook a study to begin to analyze the social costs of power generation, and to make the case for the development of an energy policy that will provide for essential needs while adequately protecting the environment and public health, and making the best use of limited resources. Steam-electric power plants discharge about 50% of all sulfur oxides, 25% of all nitrogen oxides, and 25% of all particulate matter. Health hazards and other environmental problems due to these power-generated emissions are discussed, as well as reasons for the scarcity of control technology. Nuclear power plants, which the electric industry is relying on to supply a major part of the projected increase in demand, pose a different hazard in their release of radioactivity into the environment. Both fossil-fueled and nuclear power plants are major sources of thermal pollution. Also, the vast majority of transmission lines are built above-ground, a practice that results in increased consumption of land, safety hazards, and despoilation of scenic beauty. Practices that have hindered environmental planning in electric power are discussed, and reasons to oppose Governor Rockefeller s power siting bill are presented.

12404 APTIC NO. 29709

Adam, J. R. and R. G. Semonin

COLLECTION EFFICIENCIES OF RAINDROPS FOR SUBMICRON PARTICULATES. *Battelle Memorial Inst., Richland, Wash., Pacific Northwest Lab. and Atomic Energy Commission, Washington, D. C., Fallout Studies Branch, Precipitation Scavenging Proc. Symp., Richland, Wash., 1970, p. 151-160. 4 refs. (June 2-4.)*

An experimental technique was developed to determine the scavenging efficiency of raindrops falling at terminal velocity for submicron biological aerosols. The experimental apparatus and methods used to produce the simulated raindrops and the aerosol are discussed. Scavenging efficiencies of raindrops for 1-micron Bacillus subtilis spores were determined. The amount of material scavenged is very small, approximately 0.004% for a 2-mm diameter drop. The scavenging efficiency increases exponentially with decreasing drop size to a value of 0.4% for a 0.4-mm drop. Also, electric charge on the drop dramatically increases the collection of the submicron particulates. This experimental technique is accurate and sensitive for measuring scavenging efficiencies. Ease of generation, detection, and decontamination, the uniformity of size, and the easr of concentration determination make bacteria spores well suited for use as the aerosol particulate. The only difficulty is finding other suitable spores, smaller than one micron, which are viable after atomization and which have a relatively low natural occurrence.

12405 APTIC NO. 29667

Berezhnoy, V. M.

ON THE DEPOSITION OF MATTER ON SPHERICAL AEROSOL PARTICLES IN THE RANGE OF INTERMEDIATE KNUDSEN NUMBERS. *(Ob osazhdenii veshchestva na sfericheskikh aeroeol nykh chastitsakh v oblasti prom ezhutochnykh chisel knudsena). Text in Russian. Kolloidn. Zh., 33(2):190-194, 1971. 10 refs.*

The boundary sphere method of N. A. Fuchs and the first approximation of Enskog-Chapman for the distribution function were used to derive an expression for the flux of molecules towards a gray sphere. Then this expression was compared with the formulas of N. A. Fuchs, L. Monchik and G. Reiss, D. Sahni, and the experimental data of Bradley. No reliable numerical estimate of the accuracy of these approximations was obtained because of the insufficiency and low accuracy of the experimental data available.

12406 APTIC NO. 29710

Berg, T. G. Owe

COLLECTION EFFICIENCY IN WASHOUT BY RAIN. *Battelle Memorial Inst., Richland, Wash., Pacific Northwest Lab. and Atomic Energy Commission, Washington, D. C., Fallout Studies Branch, Precipitation Scavenging Proc. Symp., Richland, Wash., 1970, p. 169-186. 26 refs. (June 2-4.)*

Experimental data on collision efficiencies show some discrepancies among themselves and with respect to theory. Collection on the back side of the scavenger is reported in the range from nothing to 131 times that on the front side. The theory disregards collection on the back side. There are also discrepancies in the optimum scavenger size. Experimental and theoretical results range from 0.5 to 2 mm drop diameter. These are explainable, but the collection on the back side poses a serious problem that needs study. (Author abstract modified)

12407 APTIC NO. 29809

Bricard, J., G. Madelaine, N. Clerc, and D. Vigla

FORMATION OF PARTICLES BY PHOTOLYSIS AND RADIOLYSIS. *(Formation de particules par photolyse et radiolyse). Text in French. J. Rech. Atmospheriques, 4(4):193-204, Oct.-Dec. 1970. 5 refs. (Presented at the Congres de l Association Francaise pour l Avancement des Sciences, 89th, Brest, France, July 6-11, 1970.)*

The formation, in natural air cleared of particles by filtration, of an ultra-fine, electrically neutral aerosol was studied by the photolysis and radiolysis of the gaseous impurities. Sulfur dioxide played an important part. The action of ammonia was also studied. The studies were carried out under known ultraviolet irradiation and the direct photo-oxidation of SO2 did not explain the results in the hypothesis of classical nucleation from sulfuric acid. Also, the number of condensation nuclei varied with temperature.

12408 APTIC NO. 30068

Briggs, Gary A.

PLUME RISE: A RECENT CRITICAL REVIEW. *Nucl. Safety, 12(1):15-24, Jan.-Feb. 1971. 34 refs.*

Comparison of a large number of plume-rise observations and formulas indicated that a relatively simple model provided the best predictions of plume rise in a variety of meteorological conditions. The model predicts that near the stack the rise of a hot, buoyant plume is proportional to the reciprocal of the wind speed, to the one-third power of the heat emission, and to the two-thirds power of the distance downwind. This two-thirds law of rise fits the bulk of published observations. Dependence on distance downwind gradually diminishes in neutral atmospheric conditions beyond the distance related to the heat emission and the stack height. In stable conditions, rather abrupt leveling of plumes occurs at a distance dependent on the wind speed and the atmospheric vertical temperature gradient. The model was also applied to the prediction of whether a hot plume will penetrate an elevated inversion and was found to agree with observations. (Author abstract)

12409 APTIC NO. 30046

Brock, J. R.

ATTACHMENT OF TRACE SUBSTANCES ON ATMOSPHERIC AEROSOLS. *Battelle Memorial Inst., Richland, Wash., Pacific Northwest Lab. and Atomic Energy Commission, Washington, D. C., Fallout Studies Branch, Proc. Symp. Precipitation Scavenging, Richland Wash., 1970, p. 373-379. 4 refs. (June 2-4.)*

Since seemingly innocuous initial amounts of toxic substances may become concentrated in the air, the distribution of trace substances in atmospheric aerosols is important. Trace elements may become attached to aerosols by absorption and condensation. Aerosol sizes differ over water and urban areas, as well as at different altitudes. Experimental and theoretical evidence have determined a mathematical equation for the rate of transfer of a condensable substance to a spherical particle. In a maritime aerosol, the largest amounts of trace substances are found in the size range from 0.2 to 2 micron; in an urban aerosol, the amount of condensed substance near 0.1 micron is 1000 times greater than at 1 micron; in a troposheric aerosol, is similar to that of the urban aerosol, but below 0.1 micron the amount of attached substance decreases as the particle number density decreases. Coagulation may have some effect on the attachment spectra. The details of the attachment spectra can give useful information on the efficiency of various mechanisms of precipitation scavenging.

12410 APTIC NO. 29695

Brodine, Virginia

EPISODE 104. *Environment, 13(1):2-27, Jan.-Feb. 1971. 41 refs.*

Thirteen High Air Pollution Potential (HAPP) episodes were announced by the Environmental Science Services Administration in 1969, most of them lasting only two or three days and affecting areas of roughly 75,000 to 250,000 square miles. However, Episode 104 touched all or part of 22 states from the Great Lakes to the Gulf of Mexico, from west of the Mississippi to the Atlantic, and affected more than twenty million people. The bad air pollution weather was observed first in Southern Wisconsin and northern Illinois on August 22. The Milwaukee County Air Pollution Control Department had just cited 58 industrial firms and government installations for violation of the county standard for emission of particulates. In Chicago, sulfur dioxide was more than triple what it had been the previous day. During Episode 104, particulates rose to 593 micrograms at one station, eight times the permitted maximum. High pressure systems like that which settled over the midwest in August 1969 are usually accompanied by periods of calm and very light winds, thus making conditions unfavorable for both upward and outward movement of pollutants. Moreover, storms over the Atlantic formed an effective barrier to high altitude air movement in a west-to-east direction. The Appalachian Mountains also slowed the movement of the light winds toward the east and southeast below 5000 feet.

12411 APTIC NO. 29470

Changnon, Stanley A., Jr.

REPLY. *Bull. Am. Meteorol. Soc., 51(4):337-342, April 1970. 13 refs. 30066 Clarke, R. H. DISCUSSIONS DEPTH OF THE BOUNDARY LAYER. Atmos. Environ., vol. 5:67-69, 1971. 12 refs. (Includes a reply by the author, Steven R. Hanna.)*

If Hanna's definition of the boundary layer as the depth through which the air is significantly affected by the surface is accepted then the conclusion follows that it embraces at least all of the convective layer, since the wind does not approach the geostrophic value until the inversion or stable layer is reached. This mechanism is strongly supported by recent extensive Australian observations, which show that friction forces act to reduce the wind throughout the mixed layer. The crucial point is that the height and character of the limiting stable layer are products of the history of the air mass in which it is embedded; it is emphatically not determined by surface fluxes or wind velocities existing at a given time, and any attempt to describe it in such terms is bound to result in failure. Some of the factors which determine the inversion height are dealt with, such as erosion by convection and horizontal advection. Another obviously important factor is large scale vertical velocity. To illustrate the problem, data from four radiosonde stations in Australia are presented, and 5 years plotted temperature and humidity values are examined.

12412 APTIC NO. 29644

Coble, Anna, Lee Langan, and Julian McCaull

NEW EYE ON THE AIR. *Environment, 13(4):34, 36-41, May 1971. 11 refs.*

A correlation spectrometer is described which can be used as a monitor in the immediate vicinity of pollution sources, as well as to map the accumulation and movement of large volumes of gas that cannot be tracked by conventional monitoring equipment. The concept of regional air quality control demands comprehensive monitoring of a wide range of pollutants and meteorological factors over large geographical areas. Drawbacks associated with present monitoring systems are cited. The correlation spectrometer takes advantage of the fact that if one disperses sunlight through a prism (or from another device call a grating), dark lines are seen imprinted on the rainbow of colors in the spectrum. Thus, the spectrometer selectively looks for certain of these lines which appear if target gases are in the atmosphere between the sun and the observer. One survey made during a twenty-mile-high balloon flight over Chicago showed a profile of pollution over the city that contrasted with low levels over the middle of Lake Michigan. Computer-printed maps were used to record levels of sulfur dioxide and nitrogen dioxide above a car traveling along highways circling St. Louis, Missouri. A major objective of this study was to assess various meteorological factors that must be accounted for in dispersion models that are useful in predicting periods of heavy pollution. Among several findings was the discovery that, in high wind, nitrogen dioxide concentration increased as one traveled away from the emission source. This concentration then decreased further downwind. Two other findings concerned the extent of chronic exposure to sulfur dioxide and nitrogen dioxide. Sulfur dioxide, in addition to nitrogen dioxide, disappeared downwind from monitored electrical power plant stations.

12413 APTIC NO. 30045

Coin, L.

AIR POLLUTION IN AN URBAN ENVIRONMENT. *(La pollution de l air en milieu urbain). Text in French. World Meteorol. Organ. Tech. Note, no. 108:141-163, 1970.*

Until recent years, little interest has been shown in average air pollution results, perhaps because of the difficulties in analyzing curves which did not take peak effects effectively into account. To remedy this shortcoming, air samples are now taken during a reduced time period. Air pollution research is attempting to supply data in a numerical form almost instantaneously, so that rapid administrative action can be taken when the toxic threshold of pollutants exceeds the permissible levels. Therefore, the existing networks must be improved to permit the establishment of warning systems and ensure full protection for the population and their property. Physicochemical and meteorological forecasting are discussed. Also, three stages of control are discussed: warnings to the population (press or radio), replacement of fuels, and various restrictions. Data is also given for air pollution in Paris, London, and Rotterdam for sulfur dioxide and engine exhausts (carbon monoxide and carbon dioxide) in annual and monthly charts.

12414 APTIC NO. 29708

Dana, M. Terry

SCAVENGING OF SOLUBLE DYE PARTICLES BY RAIN. *Battelle Memorial Inst., Richland, Wash., Pacific Northwest Lab. and Atomic Energy Commission, Washington, D. C., Fallout Studies Branch, Precipitatio Scavenging Proc. Symp., Richland, Wash., 1970, p. 137-147. 9 refs. (June 2-4.)*

A number of precipitation scavenging field experiments using uranium and rhodamine eye particles were conducted at an Olympic Peninsula (Wash.) field site. Most experiments employed air-jet atomization of a methanol solution of the tracer; variation of the solution concentration produced tracer plumes of selectable particle size. Mass median particle radii (unit density equivalent) for the experiments ranged from 0.4 to 7.5 microns. For particle radii of 3 microns and larger, experimental washout coefficients agreed well with those expected from the theory of inertial capture. Smaller particle experiments showed much higher washout than theory as much as 10 times higher for particles of about 0.5-micron radius. There is some evidence that electrical effects contributed to the scavenging of smaller particles. (Author abstract modified)

12415 APTIC NO. 29875

DeLuisi, John J.

EFFECT OF THE TEMPERATURE DEPENDENCE OF OZONE ABSORPTION ON VERTICAL OZONE DISTRIBUTIONS DEDUCED FROM UMKEHR OBSERVATIONS. *J. Geophys. Res., 76(9):2131-2137, March 20, 1971. 14 refs.*

The omission of the temperature dependence of ozone absorption in an inversion system for evaluating Umkehr observations for vertical ozone distribution can produce significant discrepancies. As a specific example, the nine-layer inversion system used by the World Ozone Data Center gave ozone distributions with ozone concentrations higher than they should be at the levels where atmospheric temperature is greater than -44 C and lower than they should be where the temperature is less than -44 C. The winter distributions are slightly more affected than the summer ones; thus a small anomalous variation in ozone concentrations in the highest layers results. Since seasonal variations in vertical profiles of both temperature and ozone increase with increasing latitude, the temperature error in Umkehr ozone distributions should also increase with latitude. It is suggested that any future work on the development of inversion systems for indirect observation of the vertical ozone distribution include a compensation for the temperature dependence of ozone absorption. (Author summary modified)

12416 APTIC NO. 29623

Diamant, R. M. E.

THE PREVENTION OF POLLUTION. *Heating Ventilating Engr., J. Air Conditioning (London), 44(523):385-394, Feb. 1971. 11 refs.*

The history of pollution is reviewed from the time of the ancient Phoenicians, Babylonians, and Egyptians, who created enormous deserts from fertile land. Water pollution is discussed, as well as the effect of carbon dioxide on the atmosphere. The higher the CO2 content of the air, the higher the ambient temperature of the earth. However, far more harmful than the addition of CO2 to the atmosphere is the formation of clouds over large areas of our planet. Due to air pollution cloud formation is always larger over industrial or otherwise inhabited areas, because of the stabilization engendered by the particles emitted. Globally, the annual input of particles below 5 micrometers in diameter into the earth s atmosphere amounts to 1600 million tons, of which 560 million tons are converted sulfates, 35 million tons are converted nitrates, 15 million tons are converted hydrocarbons, while 40 million tons could be loosely described as soot. The nature and quantities of pollutants produced per annum are presented tabularly for different fuels burned in a 1000 MW electric power station. While nuclear reactors offer many advantages, the main radioactive wastes which they produce are also cited. Oil spillage into the sea is discussed, as well as solid waste disposal, agricultural chemicals, pollution by motor cars and aircraft, and pollution by noise. Fertilizers which are used to maintain the richness of the soil consist mainly of phosphates, nitrates, and ammonium compounds. Of all the noises, those produced by modern jet engines are by far the worst and the most difficult to do anything about. The continuous exposure to noise levels much above 100 decibels has an adverse effect on hearing ability within a fairly shor time.

12417 APTIC NO. 29691

Dingle, A. Nelson

SCAVENGING OF TRACER IN SEVERE STORMS. *Battelle Memorial Inst., Richland, Wash., Pacific Northwest Lab. and Atomic Energy Commission, Washington, D. C., Fallout Studies Branch, Precipitation Scavenging Proc. Symp., Richland, Wash., 1970, p. 21-35. 10 refs. (June 2-4.)*

Specific design considerations for field experiments to study severe storms by tracer scavenging are site selection, tracer design, experimental design, and field operation. Indium is a preferred atmospheric tracer because of its large neutron cross section, convenient half life, and relative rarity as an atmospheric contaminant. Criteria in choosing the emission and placement techniques are discussed. Specific experiments using updraft innoculation and middle-level indraft air labeling are outlined including idealized flight plans and deposition patterns. Finally, the operational procedure used in a series of field experiments is described.

12418 APTIC NO. 29672

Dmitriev, M.T.

PHOTOCHEMICAL SMOG. *(Fotokhimicheskiy smog). Text in Russian. Priroda, no.2:28-35, Feb. 1971. 5 refs.*

The nature and formation mechanism of photochemical smog are considered as well as its effect on human organism, fauna, and flora and its corrosion effects; some results of studies of conditions for smog formation are also discussed. Smog formed in polluted atmospheres as a result of photochemical reactions under the effect of solar radiation. The toxicity of the new substances formed in the process exceeds that of the original pollution. Ozone, the main factor of photochemical smog, is formed at wavelengths of 253 nm and lower, which do not penetrate the atmosphere. In the presence of nitric oxide, however, ozone is formed at wavelengths of 580 nm and lower, the process being even more intense in the presence of NO_2. The most effective formation of ozone occurs in the presence of hydrocarbons and nitrogen oxides The main source of NO in the atmosphere are car exhausts. Some unsaturated hydrocarbons, emitted in car exhausts and chemical plant effluents, also take part in smog formation. In their presence various photooxidants are formed, which by oxidizing NO prevent its reduction of ozone.

12419 APTIC NO. 29689

Engelmann, Rudolf, J.

PRIORITIES IN SCAVENGING RESEARCH. *Battelle Memorial Inst., Richland, Wash., Pacific Northwest Lab. and Atomic Energy Commission, Washington, D. C., Fallout Studies Branch, Precipitation Scavenging Proc. Symp., Richland, Wash., 1970, p. 6-10. 1 ref. (June 2-4.)*

The prediction of washout below clouds for particles greater than a micron and when the precipitation is in the form of rain is fairly confident. This covers large particles from stacks and other ground-level sources. For the prediction of scavenging, empirical models are needed, models are available for below-cloud scavenging but not for in-cloud scavenging. Research should be on submicron aerosols and gases and should be directed toward obtaining the number useful for prediction and the models necessary to predict. Aerosols and pollutants of principal interest are discussed.

12420 APTIC NO. 30109

Faugere, J. G.

BORDEAUX. STUDY OF ATMOSPHERIC POLLUTION IN THE BUILT-UP AREA. *(Bordeau. Etude de la pollution atmospherique dans l agglomeration). Text in French. Pollut. Atmos. (Paris), 49(13): 17-22, Jan.-March 1971. 3 refs.*

Analyses of carbon monoxide were made from rain water obtained each month in the Bordeaux built-up area. Several assumptions were developed concerning the relationship between the CO content, local meteorological conditions, and traffic. The height of water, pollutants in solution, chlorides, and sodium were correlated. Considerable variations in the contents of insoluble matter, ash, and tar were apparent. The results of the analyses and the meteorological findings will be analyzed by a computer. Electrical resistance, pH, and sulfate, nitrite, nitrate, calcium, bicarbonate magnesium, potassium, ammonium, and iron compounds were also measured.

12421 APTIC NO. 28891

Ferguson, E. E. and F. C. Fehsenfeld

SOME ASPECTS OF THE METAL ION CHEMISTRY OF THE EARTH'S ATMOSPHERE. *J. Geophys. Res., 73(19):6215-6223, Oct. 1, 1968. 20 refs.*

Measurements of some metal ion reactions with ozone have been made in a flowing afterglow reaction system. The ions Fe^+, Mg^+, and Ca^+ react rapidly to form the metal oxide ion; sodium and potassium ions do not. Three-body reactions of the same metals with O_2 and a third body argon to form the metal dioxide ions have also been measured. Again Fe^+, Mg^+, and Ca^+ have large rate constants, but Na^+ and K^+ do not. The rapid reaction of Mg^+ plus O_3 to yield MgO^+ plus O_2 is not effective in deionizing sporadic E layers of the ionosphere because it is followed by a rapid reaction of MgO^+ plus O to yield Mg^+ plus O_2, which has also been measured and which keeps the Mg^+/MgO^+ ratio large in the E region. A similar situation will probably occur for the other metal ions. Even efficient three-body association reactions are too slow for effective ion loss in the region of the ionosphere around 105 km, known as sporadic E; it thus appears likely that ion chemistry does not play a significant role in the dionization of sporadic E layers in the ionosphere. The three-body ion association reactions may play an important role in meteor trail deionization at lower D-region altitudes. (Author abstract modified)

12422 APTIC NO. 29688

Fuquay, J. J.

SCAVENGING IN PERSPECTIVE. *Battelle Memorial Inst., Richland, Wash., Pacific Northwest Lab. and Atomic Energy Commission, Washington, D. C., Fallout Studies Branch, Precipitation Scavenging Proc. Symp., Richland, Wash., 1970, p. 1-5. 15 refs. (June 2-4.)*

Studies of precipitation scavenging are briefly reviewed in terms of three major divisions: delivery or transport of the material to the scavenging site; in-cloud scavenging by the cloud elements and precipitation, usually called rainout and snowout; and below-cloud scavenging by the precipitation, usually called washout. These earlier investigations included calculations of washout coefficients for various rainfall rates and cloud droplet sizes; the role of snow was an effective scavenger for at least large particulates; depending on crystal type, shape, fall speed, and electrical charge; and predictions of the scavenging of gases on the basis of molecular diffusion to the drop or droplet in accordance with the vapor pressures and solubilities of the free and collected gases. Scavenging of material from the air by hydrometeors of all types is of particular interest because this represents perhaps the most significant natural mechanism for cleansing the air. However, cleansing of the air results in deposition of the pollutants on or in people, animals, vegetation, land, water, and structures. The impact of deposition processes on the biosphere poses a host of new formidable problems. The biological activity of several metals such as lead are causing increasing concern over the allowable concentration limits in drinking water.

12423 APTIC NO. 29741

Gatz, D. F., R. F. Selman, R. K. Langs, and R. B. Holtzman

AUTOMATIC SEQUENTIAL RAIN SAMPLER FOR SCAVENGING STUDIES. *Battelle Memorial Inst., Richland, Wash., Pacific Northwest Lab. and Atomic Energy Commission, Washington, D. C., Fallout Studies Branch, Precipitation Scavenging Proc. Symp., Richland, Wash., 1970, p. 239-244. 5 refs. (June 2-4.)*

A sequential rain sampler that collects up to 70 samples with volumes of 500 to 1000 ml from each 0.5 mm to 1.0 mm of rain is described. Any additional rain is automatically discharged. The area of the collector is 1 sq m. All surfaces touched by the rainwater, including the bottles used to contain the samples, are polyethylene or Teflon. After every sample, an event mark is recorded on a strip chart; after the first mark the chart speed increases from 1.5 in/min. This provides adequate resolution between event marks for the computation of rainfall rate. If a time reference is provided while the chart is on fast speed, the starting and ending times of individual samples are known to within 1 sec. The sampler can operate unattended during rain for a time period that depends on the length of strip chart left when the fast chart drive is activated. (Author abstract modified)

12424 APTIC NO. 30110

Gauthier, M. and D. R. Snelling

MECHANISM OF SINGLET MOLECULAR OXYGEN FORMATION FROM PHOTOLYSIS OF OZONE AT 2537 A. *J. Chem. Phys., 54(10):4317-4325, May 15, 1971. 37 refs.*

Photolysis was studied by spectrophotometry under varying conditions of added gases. Emission from O2(1 delta g) and O2(1 sigma g) was observed from the photolysis of ozone-oxygen mixtures at 2537 A. The O2(1 sigma g) was formed by the energy transfer from O(1D), and the relative rates of removal of O(1D) by oxygen, nitrogen, and ozone were 1:0.7:9.7, respectively. The O2(1 delta g) was formed directly by photolysis. Also, photolysis and the reaction of O(3P) and 0(1D) with O3 are discussed as sources of both O2 singlet states.

12425 APTIC NO. 29582

Gooriah, G.

DISTRIBUTION OF POLLUTION AT SOME COUNTRY SITES. *Warren Spring Lab., Stevenage (England), Dept. of Trade and Industry, WSL LR- 58(AP), 22p., Feb. 1968. 1 ref.*

Smoke and sulfur dioxide concentrations at three non-urban National Survey sites, within 30 miles of Sheffield were examined in relation to wind direction. Daily average concentrations of pollution and median wind direction over the same 24 hours were obtained, and pollution roses were drawn. Pollution was highest when the wind blew from the direction of industrial towns towards the sites, presumably because of pollution drift from these towns. Because of lower turbulence, pollution increased with lower wind speed. Also, pollution roses were drawn for various conditions of atmospheric stability, including lapse, inversion, and isothermal conditions. However, no definite conclusions were obtained on the effect of atmospheric stability on the daily average pollution, possibly because conditons fluctuated so widely during the 24-hour periods. (Author abstract modified)

12426 APTIC NO. 29774

Haagen-Smit, A. J. and Lowell G. Wayne

ATMOSPHERIC REACTIONS AND SCAVENGING PROCESSES. *In: Air Pollution Arthur C. Stern (ed.), Vol. 1, 2nd ed., New York, Academic Press, 1968, Chapt. 6, p. 149-186. 77 refs.*

Atmospheric influences can change air pollutants. Through turbulence and diffusion, substances released at ground level will eventually be exposed to conditions in the upper atmosphere and become accessible to high energy photons which break up even the most stable molecules. Ozone reacts with nitrogen to form several oxides. The energy requirements, light source, reactions, free radical formation, and chain reactions in photochemical and photosensitized reactions are discussed. Heterogeneous reactions may also take place on the surfaces of various solid and liquid particles. Again, light can play an important role. Mathematical simulations of atmospheric dispersion of stack gases can be used to predict atmospheric concentrations. Inorganic pollutants include sulfur oxides and nitrogen oxides. Organic pollutants are formed in photochemical smog. The process and symptoms of photochemical smog are given including data for downtown Los Angeles. Spectrograms have been used to determine the chemical nature of smog. Eye irritation is a function of hydrocarbons and nitrogen oxides. Photochemical reactions can also cause rubber cracking. The chain reactions in photochemical smog are quite complex. Suggested photooxidation mechanisms involving branching chains and the reaction of oxygen atoms with olefins are also given. Scavenging foreign material from the atmosphere consists of deposition and conversion to normal atmospheric constituents. Most of the sulfur contaminants are emitted in the form of gaseous sulfur dioxide, some of which oxidizes to sulfur trioxide which then reacts with water vapor to form sulfuric acid. Hydrogen fluoride, hydrogen sulfide, ammonia, carbon dioxide, carbon monoxide, nitrogen oxide, fly ash, and particulates are also pollutants. The washout mechanism is effective in removing some particles.

12427 APTIC NO. 29764

Hall, Homer J. and William Bartok

NO-X CONTROL FROM STATIONARY SOURCES. *Environ. Sci. Technol., 5(4):320-326, April 1971. 7 refs.*

The release of nitrogen oxides in combustion gases from stationary sources can be minimized very often by process and design modifications. The most promising methods of combustion modification identified to date are low excess air firing, staged combustion, off-stoichiometric firing, flue gas recirculation, water injection, and, particularly, combinations of these techniques. Important design features are burner configuration, location and spacing, and the types of firing and combustion methods used. Methods of abatement making it possible to remove nitric oxide and the relatively small amount of nitrogen dioxide which accompanies it in the stack gas from a coal-burning power plant would be highly desirable, but there is no such system commercially available. Flue gas treatment processes can be considered in the following general catagories: catalytic decomposition of NOx, catalytic reduction of NOx, physical separation of NOx from the other components of the flue gas, adsorption of NOx by solids, and absorption of NOx by liquids. While the thermodynamically favored decomposition of nitric oxide would provide a comparatively simple method of controlling emissions, no catalyst has been found which provides sufficient activity at reasonable temperatures. Of all the potential flue gas control techniques, aqueous absorption systems using alkaline solutions or sulfuric acid appear the most promising for combined control of nitrogen and sulfur oxide emissions. Sources of NOx are indicated, as well as the chemistry of NOx in the air.

12428 APTIC NO. 29785

Hess, B. and I. Koeck

THERMODYNAMICS OF THE AEROSOLS IN THE ATMOSPHERE. *(Thermodynamique de l aerosol dans l atmosphere). Text in French. J. Rech. Atmospheriques, 4(4):181-192, Oct.-Dec. 1970. 12 refs.*

The increase of the mean kinetic energies of aerosol particles, due to the irregular atmospheric movements, acts upon the concentration of these particles. By taking into account the shaking temperature in the Boltzmann distribution law and in the partial pressure balance, a large concordance between the measured and the calculated aerosol particle size distributions is obtained.

12429 APTIC NO. 29915

Kattawar, G. W. and G. N. Plass

RADIANCE AND POLARIZATION OF LIGHT REFLECTED FROM OPTICALLY THICK CLOUDS. *Appl. Opt., 10(1):74-80, Jan. 1971. 20 refs.*

The reflected radiance and polarization are calculated for clouds with optical thicknesses from 10 to 100, and results are presented for both a haze and nimbostratus model. The peak in the single scattered polarization at 140 deg for the nimbostratus model persists even with all the multiple scattering events that occur for the largest optical thicknesses considered here. Calculations are made by a Monte Carlo technique, which includes the effect of multiple scattering through all orders and a realistic anisotropic phase function for single scattering appropriate for the distribution of particle sizes in the cloud. The effect of the surface albedo is included in the calculations for the optical thickness of 10. The variation of the radiance and polarization with both the nadir and azimuthal angle is given for several solar zenith angles. (Author abstract)

12430 APTIC NO. 29687

Kerker, M., E. Matijevic, V. Hampl, and D. Cooke

COLLECTION EFFICIENCY OF WATER DROPLETS IN AGCL AEROSOL. *Battelle Memorial Inst., Richland, Wash., Pacific Northwest Lab. and Atomic Energy Commission, Washington, D. C., Fallout Studies Branch, Precipitation Scavenging Proc. Symp., Richland, Wash., 1970, p. 161-167. 6 refs. (June 2-4.)*

The collection efficiency of water droplets falling through silver chloride particles with a narrow distribution of particle sizes was studied using a thermally prepared aerosol contained in a specially constructed chamber. The particle size distribution was obtained by light scattering and the mass concentration determined by direct weighing after collection by thermal precipitation. A water droplet of known weight drops from a hypodermic syringe through a light beam; breaking the beam activates a circuit that automatically opens and shuts a pair of shutters at the entrance and the exit of the scavenging column and permits the droplet to fall through the aerosol. The amount of AgCl collected is determined both by neutron activation analysis and by a colorimetric microchemical analysis. Present results indicate a collection efficiency of less than 0.1% for an aerosol with radii in the range of 0.3 micron and with particle concentrations of about 10 to the 6th reciprocal liters. (Author abstract modified)

12431 APTIC NO. 30073

Kobayashi, Yoshitaka, Masahiro Hiro, and Fujikawa Takeshi

ON PLUMBIC POLLUTION OF MUNICIPAL ATMOSPHERE--BEHAVIORS OF PLUMBIC COMPOUND AS AEROSOL. *(Toshitaiki no namari osen ni tsuite -- earozol to shiteno namari kagobutsu no kyodo). Text in Japanese. Preprint, Safety Engineering Research Group (Japan), 6p., 1970. (Presented at the Safety Engineering Society, 3rd Research Presentation Meeting, Tokyo, Japan, Dec. 9-10, 1970, Paper 19.)*

A study was made to clarify the behavior of lead particulates discharged into the atmosphere from automobile engines, particularly their diffusion and precipitation. The measurements were made at several spots along, and some distance away, from a main street with automobile traffic of 40,000 cars per day. The lead density at a spot along the side of the street (one m above ground level) was highly correlated with the magnitude of the automobile traffic, as were the densities of carbon monoxide and suspended dust. Measured for two-hour durations, the lead density was two to five microgram/cu m (daily average, 2.9 microgram/cu m on a day of comparatively low diffusion and 0.9-3 microgram/cu m (daily average, two microgram/cu m) on a day of higher diffusion. The horizontal distribution of the lead density indicated that the density decreased by one half at a point 5-10 m away from the side of the street, then remained practically constant over increasing distance. The density showed a vertical decrease right above the street while it was practically the same value in a vertical direction at a spot 100 m away from the street. The grain size distribution for the latter spot also indicated that lead particulates of smaller sizes were prevalent. This indicated that comparatively larger particulates precipitate mostly within a radius of some tens of meters from the source, as they travel with wind and density diffusion. Once diffused, the lead particulate forms a comparatively stable aerosol. This is made clear by the fact that while density measured at a spot 20 m from the ground and 100 m away from the street was 0.1%, in the suspended dust above the same spot it was 0.5%. The average density at the 100 m distance on a windy day (average wind velocity 5 m/sec or higher) was 0.50 microgram/cu m or two-thirds of the value obtained on non-windy days, which differed from the low CO density on windy days. A portion of the lead particulate first rises in the atmosphere and then gradually precipitates by gravity, thus keeping the density near the ground surface somewhat constant. Another measurement of the density indicates that rainfall is not as effective in reducing lead density in the atmosphere as it is for water-soluble sulfur dioxide.

12432 APTIC NO. 29910

Konovalov, G. S. and T. Kh. Kolesnikova

TRACE ELEMENTS IN ATMOSPHERIC PRECIPITATION AROUND THE OTKAZNOE RESERVOIR. *(Mikroelementy v atmosfernykh osakdakh rayona Otkaznenskogo vodokhranilishcha). Text in Russian. Gidrokhim. Materialy, vol. 49:74-79, 1969. 15 refs.*

The amounts of 17 trace elements introduced into Otkaznoe water reservoir with atmospheric precipitation were analyzed in a one year study. Boron, fluorine, bromine, and iodine in atmospheric precipitation were determined by chemical analysis; those of vanadium, manganese, cobalt, nickel, copper, molybdenum, silver, tin, lead, iron, aluminum, bismuth, and titanium were determined spectroscopically. The elements Co, Mo, Ag, Sn, Pb, and Bi were not found in atmospheric precipitation. The content of other elements was higher in comparison with other areas. This is explained as depending on the character of climatic conditions of the area, i.e., dry and windy climate and poor coverage by plants, which cause increased dustiness of the atmosphere.

12433 APTIC NO. 29668

Laktionov, A. G. and Yu. P. Bogomolov

MICROSTRUCTURE OF ATMOSPHERIC SURFACE LAYER AEROSOLS. *(Mikrostruktura prieyemnogo aeroeolya). Text in Russian. Izv. Akad. Nauk. SSR, Fiz. Atmosfery i Okeana, 7(3):291-301, March 1971. 10 refs.*

Particle size and concentration of aerosols in the atmospheric surface layer were measured. Particles had radii from 0.4 to 400 micron. The relation between the 223 spectra of particle size and meteorological visibility and relative humidity was analyzed. The average particle spectra was obtained for meteorological visibility ranges of 35-25, 25-16, 16-six, six-three, three-one, and one to less than one km. The giant particles in haze differed slightly from dry ones; also, big particles exceeded the size of dry ones.

12434 APTIC NO. 30105

Lane, J. A., G. E. Ashwell, and A. Dagnall

SOME RESULTS OF LIDAR PROBING OF THE TROPOSHERE. *Atmos. Environ., 5(1):49-54, Jan. 1971. 4 refs.*

Results are summarized on lidar (laser radar) soundings of haze layers, clouds, and rain showers, using a lidar with 90 pulses/min. A multi-layer echo structure was sometimes observed in the first kilometer above ground. Other soundings show wave motion in a scattering layer, with wave structure similar to that observed with centrimetric radar. Results in heavy rain illustrate the inhomogeneity in the intensity over distances of a few tens of meters. (Author abstract)

12435 APTIC NO. 30012

Langley, K. F. and W. D. McGrath

THE ULTRA-VIOLET PHOTOLYSIS OF OZONE IN THE PRESENCE OF WATER VAPOUR. *Planetary Space Sci., 19(4):413-416, April 1971. 21 refs.*

Early studies of the ultraviolet photolysis of ozone have shown that the presence of water vapor has a marked catalytic effect, producing quantum yields which are much higher than those obtained for the photolysis of pure ozone or ozone-inert gas mixtures. It was concluded in more recent work, however, that water vapor does not enhance the quantum yield in the flash photolysis of ozone. To clarify this discrepancy, three different mixtures of ozone/water/argon in the ratios 1:M:100 (where M is equal to 1, 5 and 10) were flash photolyzed, and the decay traces photographed. In all cases, the initial partial pressure of ozone was 1.0 torr. The present work and that of Biedenkapp, Hartshorn, and Bair shows that the hydroxy radical cannot react effectively with ozone even in an initiation step. To rationalize this fact and the observation that no enhancement of the ozone quantum yield by water occurs in the flash photolysis experiments, with the earlier reports of high quantum yields in steady-state photolysis, it is necessary to postulate that a chain mechanism operates in the latter case, but not in the former.

12436 APTIC NO. 29946

Marty, A.-M., M.-L. Huertas, J. Fontan, and J. C. Couturaud

THE STUDY OF THE EVOLUTION OF ATOMIC SIZED PARTICLES IN THE AIR. *(Etude de l evolution dans l air de particules de dimensions atomiques). Text in French. J. Rech. Atmospheriques, 4(4):205- 210, Oct.-Dec. 1970. 8 refs. (Presented at the Congres de l Association Francaise pour l Avancement des Sciences, 89th, Brest, France, July 6-11, 1970.)*

The evolution of neutral metallic ultra-fine particles in air was studied by measuring their diffusion coefficients. The actinium boron(211 lead 82) neutral particles seemed to reach a limited size in air as ions; their evolution was slower than that of ionized particles. Ultraviolet irradiation increased the particles size.

12437 APTIC NO. 29711

McCormack, J. D. and R. K. Hilliard

SCAVENGING OF AEROSOL PARTICLES BY SPRAYS. *Battelle Memorial Inst., Richland, Wash., Pacific Northwest Lab. and Atomic Energy Commission, Washington, D. C., Fallout Studies Branch, Precipitation Scavenging Proc. Symp., Richland, Wash., 1970, p. 187-204. 4 refs. (June 2-4.)*

The washout of aerosol particles by aqueous sprays was measured in a 750 cu m closed chamber; the average fall distance for drops was 11.6 m. Experimental conditions covered a range of those expected in a containment vessel following a loss-of-coolant accident in a pressurized water reactor, including room temperature air. The washout of three types of aerosol particles was measured: water-soluble cesium and iodine particles and insoluble uranium oxide particles. The time-dependent mass concentrations of these aerosol materials were measured at many locations within the enclosed gas space. A model was developed which describes the particle washout by relating the washout coefficient to the single-drop collection efficiency. The washout of all particle types was significantly higher than predicted by the model using particle sizes measured by cascade impactor sampling during the tests. Drop-collection efficiencies for capturing cesium and particulate iodine decreased with spraying time from about 0.04 to about 0.005. Efficiencies for uranium were about half the magnitude indicated for the soluble particles. (Author abstract modified)

12438 APTIC NO. 29584

Meroney, Robert N.

GASEOUS PLUME DIFFUSION ABOUT ISOLATED STRUCTURES OF SIMPLE GEOMETRY. (ANNUAL PROGRESS REPORT). *Atomic Energy Commission Rept. C00-2053-1, 18p., March 1970.*

Results are reported for wind tunnel experiments consisting primarily of a (1) qualitative study of gas dispersion tendency and flow field in the vicinity of the model structure by visual observation of smoke plume trajectories and (2) a quantitative study of gas concentration distributions in the downstream region from the model. The test program also incorporated two other test variables: different meteorological stratifications, neutral or stable, and different aerodynamic effects by use of various wind approach angles. Dispersion was found to be affected by the aerodynamic structure of the flow and the temperature stratification condition. Typical concentration profiles and iso-concentration contours are represented graphically. Visualization photographs are presented for different gas release positions. The photographs show a very strong mixing in the cavity region. In the wake region, the turbulent mixing motion was still the domiant effect. The typical local concentration distribution curves display similar contours almost independent of release position. The stable stratified flow suppressed the turbulent motion and resulted in higher concentrations at a given downwind distance. (Author discussions modified)

12439 APTIC NO. 29697

Moriguchi, Minoru

EVALUATION TRIALS OF URBAN AIR POLLUTION MODELS. *(Taikiosen moderu niyoru toshi osen nodo no suitei). Text in Japanese. Kogai to Taisaku (J. Pollution Control), 7(3):213-220, March 1971. 9 refs.*

Beginning with the crude diffusion model of F. K. Davis applied to air pollution in Philadelphia, the Clark, Miller, and

Turner Mathematical models were explained. The Miller model, applied to Tokyo and Kanagawa Prefecture, suitably predicted air pollution due to a group of small-scale sources or auto exhausts but not to coast areas directly affected by pollutants from heavy industries. Also, the model is suitable for areas distant from the source for sulfur dioxide pollution during the summer. The puff model was a recent development. Information on a pollutant source was gathered in Tokyo and analyzed according to the model to calculate daily variation of pollution concentration in summer and winter. When compared with the observed values, a good agreement was obtained. However, at half the observation points the estimated value was over twice as large as the observed one. By a more accurate estimation of parameters in the model, prediction of pollutant concentration of practical use was expected to be feasible. This type of model, based on pollutant source activities, has difficulty in obtaining information on source activities, complexity of the diffusion structure of urban areas, and lack of knowledge on the estimation of effective chimney height or diffusion parameters for flue gases from chimneys of various heights. The puff model, however, is the most promising.

12440 APTIC NO. 29694

Perkins, R. W., C. W. Thomas, J. A. Young, and B. C. Scott

IN-CLOUD SCAVENGING ANALYSIS FROM COSMOGENIC RADIONUCLIDE MEASUREMENTS. *Battelle Memorial Inst., Richland, Wash., Pacific Northwest Lab. and Atomic Energy Commission, Washington, D. C., Fallout Studies Branch, Precipitation Scavenging, Proc. Symp., Richalnd, Wash., 1970, p. 69-97. 10 refs. (June 2-4.)*

Measurements of the cosmogenic radionuclides Cl, 38, Cl, 39, and Na 24 in consecutive rainwater samples allowed a comparison of precipitation scavenging in two very dissimilar study areas. The radionuclides which are formed by spallation of atmospheric argon attach themselves to the natural aerosol and thus serve as tracers of precipitation scavenging processes. Rainwater from a large polyethylene-sheet collection area is passed continuously through Al2O3, cation, and anion beds where the radon daughter Bi 214, Na 24, and Pb 214, and the radiochlorines are collected. Direct counting of the ion-exchange beds on multidimensional gamma-ray spectrometers permits the Na 24 and radiochlorine measurements without significant interference from the radon daughters. At both the Quillayute, Wash. site, near the coast, and the Richland, Wash. site, a few hundred miles inland, a very definite inverse relation between precipitation rate and cosmogenic radionuclide concentrations was observed. The cosmogenic radionuclide concentrations were several times lower for a given rainfall rate in the coastal than in the inland rain. This is explained by the higher elevation for the inland rain formation where higher cosmogenic radionuclide production and a greater evaporation during raindrop fall occur. The Cl 39:Cl 38 ratios were similar at the two locations, indicating similar time periods for the in-cloud development of raindrops. The Na 24:Cl 38 ratios were consistently higher at the inland site, which may reflect the addition of cosmogenic radionuclides from higher air masses. The cosmogenic radionuclides are discussed in terms of the various in-cloud precipitation formation processes which they help define. (Author abstract)

12441 APTIC NO. 29681

Popov, V. A.

AN EXPERIMENTAL STUDY OF PHOTOCHEMICAL OXIDATION OF ORGANIC SUBSTANCES IN THE ATMOSPHERE. *(Ob eksperimental nom izuchenii fotokhimicheskogo okisleniya organicheskikh veshchestv v atmosferno vozdukhe). Text in Russian. Gigiena i Sanit., 36(2):7-10, 1971. 15 refs.*

The experimental evidence is presented that furan compounds can tak part in atmospheric photochemical reactions taking place under solar radiation. The model photochemical reactions were carried ou with nitric oxide and the studied organic substance introduced into a closed chamber and irradiated. Photochemical activity of the studied substance was measured by the time necessary to achieve maximum nitrogen dioxide concentration. The use of oxidant yield a an additional indicator of velocity of photochemical processes was not suitable when furan compounds are involved. The mechanism of observed processes was proposed in which NO2 formed by NO oxidation decomposes under uv irradiation to NO and elemental oxygen, which combines with molecular oxygen to give ozone. Both ozone and elemental oxygen attack organic substances which result in a C-C bond breakage. Organic peroxides, peracids, and free radicals thus formed oxidize NO to NO2. Reactions in a closed system are terminated by reactions of products with NO2. The character of photochemical processes was studied and some main products identified on tetrahydrofuran and 3-heptene reactions. The velocit of the photochemical reaction for the first one increased with an increase in the tetrahydrofuran to NO ratio. The oxidants are predominantly organic molecules. The content of ozone in heptene photochemical oxidation was only some 10% and even less for tetrahydrofuran. Sulfur dioxide accelerates NO to NO2 conversion and increases yield of oxidants.

12442 APTIC NO. 29780

Postma, A. K.

EFFECT OF SOLUBILITIES OF GASES ON THEIR SCAVENGING BY RAINDROPS. *Battelle Memorial Inst., Richland., Wash., Pacific Northwest Lab. and Atomic Energy Commission, Washington, D. C., Fallout Studies Branch, Precipitation Scavenging Proc. Symp., Richland, Wash., 1970, p. 247-259. 7 refs. (June 2-4.)*

Existing data on gas absorption by drops are reviewed to show the relative importance of solubility on scavenging in the atmosphere. Numerical examples of washout coefficients for a number of gases of interest show the influence of solubility and chemical reaction. The equilibrium partition coefficient is a controlling parameter in absorption of gases by waterdrops. It influenced both the rate of absorption and the maximum amount of gas that can be absorbed. The present gas absorption theory appears to be adequate in describing absorption by stagnant drops. In applying the theory, one must know the drop size, solute diffusivities in both phases, the partition coefficient, and the rate and extent of the chemical reactions that occur. Drop mixing is potentially important in determining the rate of absorption for cases in which liquid-phase transfer resistance is a controlling factor. Although existing data indicate that millimeter size drops do not circulate, more data are needed to define the conditions under which circulation will occur and enhance the absorption rate. For gases that ionize in solution, disproportionation generally causes enhancement in the overall partition coefficient. The extent of ionization must be known before washout can be accurately predicted. Chemistry studies of rainwater are needed to define

partition coefficients for airborne pollutants. The data obtained would provide a basis for predicting scavenging of trace pollutants.

12443 APTIC NO. 29692

Radke, L. F., W. D. Scott, and C. E. Robertson

INTERACTIONS OF CLOUD CONDENSATION NUCLEI AND ICE NUCLEI WITH CLOUD AND PRECIPITATION ELEMENTS: A REVIEW. ***Battelle Memorial Inst., Richland, Wash., Pacific Northwest Lab. and Atomic Energy Commission, Washington, D. C., Fallout Studies Branch, Precipitation Scavenging Proc. Symp., Richland, Wash., 1970, p. 37-48. 15 refs. (June 2-4.)***

Ground and aircraft measurements showing the effect of rainfall, snowfall, and cloud formation and evaporation on the concentration of cloud condensation nuclei (CCN) and ice nuclei (natural and artificial) are reviewed, and the removal of sea-salt nuclei by precipitating stratiform over the ocean is detailed. Snowfall is shown to be relatively ineffective in scavenging artificial ice nuclei. The effect of the onset of rain during shower activity is discussed with reference to ice-nuclei concentration. Clouds are sources and sinks for particles active in cloud processes, cloud condensation nuclei, sodium-containing particles, and ice nuclei. Scavenging processes are most likely operating in these clouds, and they alter the number, size, and activity spectrum of these particles. Coupled with evaporation of the cloud hydrometeors, accumulation zones for these particles appear to be formed at the base of clouds. Agglomeration and gas-to-particle conversion processes are probable mechanisms both for producing effective cloud condensation nuclei and for enhancing the nucleating ability of active CCN in clouds.

12444 APTIC NO. 30008

Rallis, D. A. and J. M. Goodings

DISSOCIATIVE ELECTRON ATTACHMENT PROCESSES IN SO2 AND NO2. ***Can. J. Chem., 49(9):1571-1574, May 1971. 13 refs.***

A trapped electron apparatus was used to identify the processes involved in negative ion formation for the triatomic oxides sulfur dioxide and nitrogen dioxide. Two 0(-) peaks are observed in SO2 with onset values at 4.2 plus or minus 0.1 sub 5 and 6.3 plus or minus 0.2 eV and peak values at 5.0 plus or minus 0.2 sub 5 and 7.4 plus or minus 0.1 sub 5 eV, respectively. From kinetic energy analysis of the 0(-) ions, both peaks are found to have the same dissociation limit involving sulfur monoxide in its ground state. For NO2, two dissociative electron attachment peaks are observed with onset values at 1.6 plus or minus 0.2 and 7.3 plus or minus 0.3 eV, and peak values at 3.0 plus or minus 0.2 and 8.1 plus or minus 0.2 eV, respectively. The first broad peak is explained by overlapping contributions from two processes having the same dissociation limit involving ground state nitric oxide; they differ only in the amount of kinetic energy possessed by the fragments. The second peak appears to involve electronic excitation of the neutral fragment of NO with zero kinetic energy at onset. (Author abstract)

12445 APTIC NO. 29705

Rancitelli, L. A., R. W. Perkins, T. M. Tanner, and C. W. Thomas

STABLE ELEMENTS OF THE ATMOSPHERE AS TRACERS OF PRECIPITATION SCAVENGING. ***Battelle Memorial Inst., Richland, Wash., Pacific Northwest Lab. and Atomic Energy Commission, Washington, D. C., Fallout Studies Branch, Precipitation Scavenging Proc. Symp., Richland, Wash., 1970, p. 99-108. 14 refs. (June 2-4.)***

Rainwater samples collected at Quillayute, Wash., were analyzed by a multielement technique of neutron activation analysis to estimate the origin and removal rates of atmospheric aerosols. The concentrations of 19 elements measured in each sample were compared with concentrations in seawater and the earth s crust to establish the origin of each element. The sodium, chlorine, and bromine are primarily of marine origin; the scandium, cobalt, manganese, potassium, chromium, rubidium, and cesium could come from continental dust. The silver, selenium, antimony, arsenic, zinc, and possibly copper appear to have origins independent of the marine aerosol or continental dust. Scavenging coefficients ranging from 0.5 to 0.0003 reciprocal seconds were estimated from the concentrations of cobalt, iron, scandium, and antimony in rainwater and known trace-element profiles in the atmosphere. The measurement of elements with different origins can shed light on any differences in the scavenging efficiency of different aerosol particles and of aerosol particles from different elevations in a storm system. (Author abstract modified)

12446 APTIC NO. 29952

Randerson, Darryl

A NUMERICAL EXPERIMENT IN SIMULATING THE TRANSPORT OF SULFUR DIOXIDE THROUGH THE ATMOSPHERE. ***Atmos. Environ., 4(6):615-632, Nov. 1970. 24 refs.***

A numerical experiment was conducted to simulate the dispersion of sulfur dioxide over Nashville, Tennessee. The basic equations included the effects of three-dimensional advection, diffusion, and variations in local topography. Also included in the model were the effects of chemical decay and source strength. A variable, vertical exchange coefficient was incorporated in the diffusive portion of the model. The predicted fields of SO2 were aligned parallel to the air flow. Predicted concentrations were of reasonable magnitude, some corresponding with observed values, when sources were permitted to exist on the top level of the model. When the sources from the top boundary were removed, the predicted values were also of sensible magnitudes; however, the valut0ss were smaller and the model slightly under predicted SO2 concentrations. The first boundary condition may be representative of atmospheric conditions of low-level inversions, the other might possibly be applicable to a deep, neutrally stable atmospheric condition. (Author abstract modified)

12447 APTIC NO. 29583

Raynor, Gilbert S.

THE CURRENT STATUS OF DEPOSITION RESEARCH. ***Atomic Energy Commission, Washington, D. C., Atomic Energy Commission Meteorol. Activities Proc. Conf., Upton, N. Y., 1964, p. 133-138. 73 refs. (May 19-22.)***

Particle deposition is a universal occurrence that ultimately affects the whole earth s surface as dispersion affects its atmosphere. An understanding of deposition and the processes responsible for it is being obtained through the formulation of physical and mathematical theories, by field experimentation with controlled releases, and by observation and measurement of natural and accidental emissions. However, five major areas of research exist in which additional information is essential to advance knowledge of deposition. There must be experimental evaluation of existing theory and experimental determination of the behavior of particulates very close to sur-

faces, including a more precise definition of boundary conditions. There is a need also for additional field data from experiments designed to compare deposition with the depletion of airborne material and for data fro experiments designed to measure variation of deposition with meteorological conditions, particle parameters, surface characteristics, distance from source, and time after release. Finally, deposition theory must model more realistically actions taking place in the natural atmosphere.

12448 APTIC NO. 29903

Reiquam, H.

A METHOD FOR OPTIMIZING POLLUTANT EMISSIONS IN AN AIRSHED. *Atmos Environ., 5(1):57-64, Jan. 1971. 4 refs.*

A method is suggested for using a transport and accumulation model to choose the best pollutant source distribution in an airshed. Emissions are found as a function of a pre-determined pollutant concentration limit, and the volume of air available for dispersion. This approach is designed as a tool for obtaining an answer to an air resource management question such as, with a given air quality standard, what is the optimal distribution of sources which will minimize the likelihood that pollutant concentrations will esceed that standard in an airshed with a given climate? In contrast to diffusion models which operate on plumes expanding under the influence of turbulent eddies, the model used here involves the transport and accumulation of pollutants within an entire airshed during types of episodes which are associated with observed high concentrations. An airshed is treated as a set of discrete sub-volumes and a basic assumption is that mechanisms exist which will effect complete mixing resulting in a uniform distribution of pollutants within each sub-volume. Using dynamic programming, it is possible to work upstream in space and time so as to optimize the allocation of emissions in the various parts of an airshed in order that specified air quality standards not be violated.

12449 APTIC NO. 29775

Rosinski, J. and G. Langer

PARTICLE AND DEUTERIUM CONTENT IN SNOW. *International Assoc. of Meteorology and Atmospheric Physics, Intern. Conf. Cloud Phys., Toronto, Canada, 1968, p. 331-335. 11 refs. (Aug. 26-30.)*

Samples were collected during snowstorms in the vicinity of Winter Park, Colorado at 2600 and 3400 m altitudes, and the concentrations and size distribution of solid, water-soluble particles, and the Deuterium/Hydrogen ratio were determined. During long-duration snowstorms, the lighter flakes generally contained less deuterium than heavier flakes. Snow crystals continued to grow during their fall by further condensation of water vapor. The concentration of aerosol particles follows the same pattern as deuterium. Thus, the lighter snowflakes formed in a D and aerosol- depleted air parcel. The scavenging of different-sized aerosol particles was also discussed. The snowflakes grew by coalescence between themselves. Generally, increasing aerosol count was found on increasingly large snowflakes. During a short-duration snow shower, small aerosols were captured during the initial stages of ice crystal growth. The aggregation of individual ice crystals into snowflakes did not change the particle concentration of the ice phase. Particles with sizes corresponding to ice nuclei were predominant in small crystals. Tritium can also serve as a gaseous tracer. Depending on their size, aerosol particles provide a number of tracers.

12450 APTIC NO. 28884

Rudder, Ralph R. and David R. Bach

RAYLEIGH SCATTERING OF RUBY-LASER LIGHT BY NEUTRAL GASES. *J. Opt. Soc. Am., 58(9):1260-1266, Sept. 1968. 23 refs.*

Measurements of Rayleigh scattering from atoms and molecules in the gaseous state at 1-atm pressure are described. The use of a Q-switched ruby laser of 8-MW average power and care in minimizing spurious light permitted the determination of very small depolarizations. No depolarization could be detected in the scattering from argon and helium. However, finite depolarization ratios (for vertically polarized incident light) were measured for xenon and methane: .000155 plus or minus .000025 and .000127 plus or minus .000023, respectively. Departures from ideal gas behavior provide the most plausible explanation for these findings. Depolarization ratios were also measured in hydrogen, deuterium, nitrogen, and nitrous oxide, and were found to be lower than generally accepted values. Measured differential-scattering cross sections at 60 deg for He, Ar, Xe, CH4, H2, D2, N2, and N2O were within experimental error of values calculated from known indices of refraction. The angular dependence of Rayleigh scattering in N2 as a function of the polarization states of both incident and scattered radiation was studied from 30 deg to 150 deg, and was found to be in agreement with theory. (Author abstract)

12451 APTIC NO. 29712

Saunders, C. P. R., M. H. Smith, and J. Latham

CONTINUOUS CHARGED CLOUD-PARTICLE SAMPLER. *Battelle Memorial Inst., Richland, Wash., Pacific Northwest Lab. and Atomic Energy Commission, Washington, D. C., Fallout Studies Branch, Precipitation Scavenging Proc. Symp., Richland, Wash., 1970, p. 205-212. 12 refs. (June 2-4.)*

An instrument was designed which will continuously measure the charge and dimensions of individual ice crystals or water droplets within clouds, particle-size distribution, and volume of charge densities inside clouds. A collimated beam of particles passes through a transverse electric field before impinging on a moving belt of 35-mm film coated with Formvar which is softened immediately before exposure to the beam. Each particle is deflected by an amount proportional to its charge-to-mass ratio. The dimensions, type, and charge of each collected particle can therefore be determined by subsequent analysis of the replicas, using a stop-motion projector allied to a data-recording system. If required, the dimensions of selected particles can be determined more precisely by a scanning electron microscope. (Author abstract modified)

12452 APTIC NO. 29714

Saxena, V. K. and J. L. Kassner, Jr.

THERMAL-DIFFUSION CHAMBERS AS CLOUD-NUCLEI COUNTERS. *Battelle Memorial Inst., Richland, Wash., Pacific Northwest Lab. and Atomic Energy Commission, Washington, D. C., Fallout Studies Branch, Precipitation Scavenging Proc. Symp., Richland, Wash., 1970, p. 217-238. 97 refs. (June 2-4.)*

In contrast to their application to nuclear particle detection, the operation of a thermal-diffusion chambers for cloud nuclei counting brings in a transient effect associated with the sample introduction. Also, two detrimental effects accompany the wall heating and vapor depletion and may cause uncertainty in measurements. Depending upon the operating supersaturations, there are also some limitations on the counting technique used with these chambers, which is usually direct photography of the sensitive region. In the light of these findings, the designs of existing thermal-diffusion chambers are analyzed and some suggestions outlined for future improvement in their performance.

12453 APTIC NO. 29636

Saychuk, V. I. and O. G. Narskikh

FORMATION OF FOG ON THE NUCLEI OF HUMIDITY CONDENSATION. *(Obrazovaniye iskusstvennogo tumana na yadrakh kondensatsii vlagi). Text in Russian. Kolloidn. Zh., 2(9-10):801-806, 1936. 15 refs.*

Laboratory tests were carried out to investigate the possibility of mist formation on hygroscopic nuclei of humidity condensation. The stability of mist formed and the effect of humidity on it were studied. The laboratory results were applied in the open air. It was possible to form a mist on hygroscopic nuclei of condensation at a relative humidity much lower than saturated. The following gases proved to be active in humidity condensation: sulfur trioxide, phosphorous pentoxide, nitrogen dioxide, nitrous oxide, and hydrochloric acid. The stability of mist formed is connected with the chemical nature of active condensation nuclei. Gases with considerable affinity to water form mist with large droplets. Stability of the mist depends on the size of droplets and is highest for medium-size droplets. The results showed that under certain conditions it is possible to form a mist on hygroscopic nuclei of condensation.

12454 APTIC NO. 29699

Selezneva, Ye. S., B. I. Styro, V. G. Khorguani, and A. Kh. Khrgian

INTERNATIONAL CONFERENCE ON CONDENSATION NUCLEI AND ICE-FORMING NUCLEI. *Izv. Akad. Nauk. SSSR, Ser. Fiz. Atmosfery i Okeana, 6(3):183-185, March 1970.*

The 7th International Conference on Condensation Nuclei and Ice-forming Nuclei was held on the 18th-24th of September in Prague and Vienna. Several papers were devoted to the physical problem of the creation of nuclei, including their photochemical formation under the influence of ultraviolet radiation. A direct correlation was established between the amount of sulfur dioxide in the air and the concentration of nuclei. One paper was presented on the photochemical formation of crystallization nuclei from the lead oxide of automobile exhausts. The oxides of nitrogen were responsible for the oxidation of lead in the atmosphere. Others examined the thermodynamic conditions of vapor condensation on a mixed condensation nucleus in which its insoluble part was not completely wetted by the electrolyte incorporated in the nucleus. The hypothesis was developed that the cooling of nuclei to low temperatures at a humidity less than saturation humidity made them subsequently more active. A paper was presented on heat-mass transfer in the formation of a cloud and on the role of boundary conditions. Additional results from other studies are mentioned.

12455 APTIC NO. 29865

Slawson, P. R. and G. T. Csanady

THE EFFECT OF ATMOSPHERIC CONDITIONS ON PLUME RISE. *J. Fluid Mech. (Cambridge), vol. 47(1):33-49, May 1971. 8 refs.*

The buoyant rise of chimney plumes is discussed for relatively large distances from the source, where atmospheric turbulence is the dominant cause of mixing (rather than turbulence due to the plume s own upward motion). A simple theory is developed which shows a number of different shapes plumes can have under different atmospheric conditions (particularly in an unstable environment). Experimental data collected near Toronto by kite-borne radiosondes are presented together with reasonably detailed supporting information on the atmospheric temperature structure. These (and earlier results) often show quite complex plume behavior at large distances from the source, which can, however, be readily understood in terms of the simple theory presented. (Author abstract modified)

12456 APTIC NO. 29707

Sood, S. K. and M. R. Jackson

SCAVENGING BY SNOW AND ICE CRYSTALS. *Battelle Memorial Inst., Richland, Wash., Pacific Northwest Lab. and Atomic Energy Commission, Washington, D. C., Fallout Studies Branch, Precipitation Scavenging Proc. Symp., Richland, Wash., 1970, p. 121-136. 11 refs. (June 2-4.)*

The scavenging efficiency of naturally precipitating snow and ice crystals was determined for submicron polystyrene latex and sodium chloride aerosols. The effect of crystal habit, crystal dimensions, and particle size of scavenging efficiency was established. The scavenging efficiency was independent of crystal habit for the particles studied. Efficiency increased with decreasing crystal diameter. There is a minimum scavenging efficiency of snow and ice crystals for particles in the size range 0.3 to 0.5 microns. More experimental work is necessary to establish the effect of scavenging efficiency on particle surface characteristics and electrostatic charge on snow crystals and aerosol particles.

12457 APTIC NO. 29706

Steffe, Dirl H.

CONCENTRATION VARIATION OF SOME TRACE METALS IN PRECIPITATION FROM GREAT PLAINS THUNDERSTORMS. *Battelle Memorial Inst., Richland, Wash., Pacific Northwest Lab. and Atomic Energy Commission, Washington, D. C., Fallout Studies Branch, Precipitation Scavenging Proc. Symp., Richland, Wash., 1970, p. 109-120. 2 refs. (June 2-4.)*

During the summer of 1969, sequential rain and hail samples were collected from several thunderstorms in western South Dakota and Nebraska. Samples were collected in rapid time sequence at a fixed geographical point in the path of the most intense storm activity, and were later analyzed for concentrations of zinc and silver using an atomic absorption spectrophotometer with a sampling-boat attachment. Both silver and zinc concentrations generally decreased with time in the rain but sometimes varied sharply. The silver and zinc concentrations in hail were always as high as, or higher than, those of the accompanying rain. (Author abstract modified)

12458 APTIC NO. 29773

Strom, Gordon H.

ATMOSPHERIC DISPERSION OF STACK EFFLUENTS. *In: Air Pollution. Arthur C. Stern (ed.), Vol. 1, 2nd ed., New York, Academic Press, 1968, Chapt. 8, p. 227-274. 55 refs.*

Pollution from stack plumes is dependent on many factors including wind, weather, number of stacks, particle size, and so on. Gaseous and particulate plumes dilute in the atmosphere and are then dispersed downwind. Velocity is divided into its time mean direction and magnitude (the usual wind speed). Also, atmospheric turbulence is divided into two types, convective and mechanical. Gas plumes can take the forms of looping, coning, fanning, fumigating, and lofting, which are caused by the stability of the air. Topography, buildings, and other obstructions can affect gas plumes in ground level concentration, diffusion, and plume path. Analytical methods can predict stack plume characteristics. One is the two-step plume-path-diffusion method which determines the effective stack height, gas diffusion, plume path, dust deposition, plume rise, and other measurements by mathematical models. The removal of pollutants from stack gases can sometimes adversely effect plume characteristics. Various diffusion models and equations are discussed. The sampling period and nonuniform atmospheric conditions can also effect plume rise and distribution. Mathematical models are given for particle deposition. Plumes from vents and short stacks are far less easily analyzed than those from high stacks. A review is made of the analytical methods required for field and scale model experiments (generally in wind tunnels).

12459 APTIC NO. 29934

Suzuki, Shin

PHOTOCHEMICAL SMOG AND ITS REACTION MECHANISM. *(Kokagaku smoggu to sono Hanno kiko). Text in Japanese. Eisei Kagaku (J. Hyg. Chem.), 17(2):56-74, April 1971. 40 refs.*

Smogs of Los Angeles and London types are briefly described. The substances believed to absorb wave lengths of 3000 A or longer to yield smog-causing substances are shown in a table quoted from Leighton s study (1961). The relationship between photochemical smog and the density of oxygen is discussed. Studies of Los Angele smog characterized by fogginess, eye irritation, rubber cracking, and specific patterns of plant damage, revealed the existence of oxidant similar to ozone in the smog. The formula developed by Stephens to explain the formation of O3, nitrogen dioxide, aldehyde ketone, peroxyacetyl nitrate (PAN) and sulfuric acid is reviewed, and the typical pattern of the smog-forming reaction mechanism is explained.

12460 APTIC NO. 29880

Swinnerton, J. W., R. A. Lamontange, and V. J. Linnenbom

CARBON MONOXIDE IN RAINWATER. *Science, 172(3986):943-945, May 28, 1971. 10 refs.*

Results are reported for a series of measurements on carbon monoxide in rainwater collected at three different locations--in Washington, D. C., over the Pacific Ocean, and on the island of Hawaii. The measurements show up to a 200-fold supersaturation of carbon monoxide in rainwater relative to the partial pressure of the gas in the atmosphere. The additional natural source of carbon monoxide indicated by the measurements is tentatively assigned to the region where rain is first formed in clouds. There is evidence that rain contains sufficient organic matter for photochemical reactions which could lead to production of carbon monoxide. Electric discharges within clouds may also lead to a slight dissociation of carbon monoxide. Methane concentrations measured in the same rainwater samples show that the partitioning of this gas, unlike that of carbon monoxide, is very close to a state of equilibrium.

12461 APTIC NO. 29893

Teshirogi, Naohisa, Sadaichi Ozaki, and Yoshitada Uchiyama

EFFECTS OF ATMOSPHERIC CONDITIONS ON AUTOMOBILE EXHAUST GAS COMPOSITIONS. *(Taiki joken to haiki gasu sosei). Text in Japanese. Kikai Shikenjo Shoho (J. Mech. Lab.), 23(2):48-65, March 1969. 12 refs.*

The effects on automotive emissions of atmospheric conditions which change with weather conditions and seasons, such as ambient pressure, temperature, and humidity, were determined to permit establishment of adequate methods of fuel supply or mixture formation in automobile engines according to the changes in these conditions. Tests on a conventional twin-cylinder four-stroke cycle gasoline engine were conducted by changing the pressure, temperature, and humidity in an environmental testing room. The exhaust gas was extracted from the engine and analyzed by nondispersive infrared analyzers. Ambient pressure and temperature caused direct changes in the mixing process or the mixture ratio in the carburetor. The concentration of carbon monoxide and unburned hydrocarbons are reduced under high pressures and low temperatures. Humidity does not change the mixture ratio but decreases the combustion speed in the engine cylinder; therefore, as the pressure of water vapor in the air becomes higher, the hydrocarbon concentration increases faster than the carbon monoxide in the exhaust emissions.

12462 APTIC NO. 29820

Ukeguchi, Nobuhiro and H. Okamoto

ESTIMATION OF GROUND LEVEL CONCENTRATION BY SMOKE-DIFFUSION WIND TUNNELS. *Text in Japanese. Mitsubishi Juko Giho (Mitsubishi Heavy Ind. Tech. Rev.), 8(2):179-187, March 1971. 35 refs.*

Air pollution is a serious social problem. Many people, including investigators, plant operators, engineers, executives, and others have been trying to abate and control air pollution. Measures are needed to diffuse and dilute stack gases so that they will not harm human beings, plants, animals, or materials after atmospheric diffusion. Three methods can be used to estimate stack gas diffusion--field survey, empirical and theoretical calculations, and the wind tunnel technique. The history of air pollution is described in addition to wind tunnel experiment by the MHI-developed method to test diffusion. Apparatuse, test results, and the effects of topography, downdraught, structures (decrease in the turbulent zone), and wind speed are also mentioned.

12463 APTIC NO. 29822

Ukeguchi, Nobuhiro and Yasuo Ide

TURBULENT DIFFUSION THEORY TAKING TURBULENT BOUNDARY LAYER INTO CONSIDERATION. *Text in Japanese. (Mitsubishi Juko Giho Mitsubishi Heavy Ind. Tech. Rev.), 8(2):188-195, March 1971. 25 refs.*

The serious problem of air pollution is mostly caused by stack smokes. An estimation of the ground concentration of smokes which are diffused by atmospheric turbulence is important for pollution prevention. A mathematical measurement method was developed. By measuring wind velocity and turbulent velocities, turbulent diffusivity coefficients were determined. Then these were used to derive the numerical value of diffusion from a continuous elevated source located at an arbitrary height in or outside of the turbulent boundary layer. A more general diffusion formula was developed from existing diffusion formulae. Diffusion from a point source is also discussed.

12464 APTIC NO. 29850

Ukeguchi, Nobuhiro, Yasuo Ide, and Hiroshi Kamazawa

ON THE DIFFUSION OF AUTO-EXHAUSTED GASES. *Text in Japanese. Mitsubishi Juko Giho (Mitsubishi Heavy Ind. Tech. Rev.), 8(2):250-253, March 1971.*

The rapid increase in the number of automobiles has resulted in air pollution caused by auto exhausts. Research and development is needed to improve the engine so as to help solve the air pollution problem. Air pollution control, with estimates of exhaust gas diffusion, is described. Traffic patterns and road forms, in connection with road location and meteorological conditions, are discussed. A ventilation system for closed tunnel roads and the wind tunnel technique for diffusion estimates are also reported. (Author abstract modified)

12465 APTIC NO. 30107

Wang, Hsuan-Heng and Paul Halpern

EXPERIMENTS WITH A REGIONAL FINE-MESH PREDICTION MODEL. *J. Appl. Meteorol., 9(4):545-553, Aug. 1970. 21 refs.*

Twelve- and 24-hr millibar forecasts of atmospheric motions were made using a hemispheric dependent, limited-area, fine-mesh prediction model. The model is barotropic and makes use of the primitive equations. Boundary conditions are obtained via a coarse-mesh hemispheric model, and are imposed during the subsequent integration of the fine-mesh model. Two methods of initializing the fine-mesh simulation are presented. Comparison between the coarse-mesh and fine-mesh results is shown for the case of a rapidly moving deep cyclonic system over the central U. S. The quality of the fine-mesh predictions indicates the validity of the approach. (Author abstract modified)

12466 APTIC NO. 29829

Wasilewska, J. and U. Krause

DISSIPATION AND PRECIPITATION OF DUST EMITTED BY A STEELWORKS. *(Rozprzestrzenianie sie i opad pylu emitowanego przez hute). Text in Czech. Prace Inst. Hutniczych, 22(6):347-352, 1970. 13 refs.*

The dissipation and precipitation of dust emitted by a steelworks into the premises and the surrounding area can be calculated. An Odra 1003 (1013) computer was used to calculate the amount of precipitation in a 118 sq km area. The precipitation was measured at 483 spots spaced 0.5 km apart located in a rectangular coordinate system with axes of x equals 10.6 km and y equals 11.1 km, with reference to the basic parameters pertaining to the meteorological conditions, the pollution source, and the composition of the polluting medium. Also, the precipitation was calculated separately for each of the six departments of the steelworks. The measurement results were then used to plot the scheme of isoconic lines of mean annual dust precipitation in that region.

12467 APTIC NO. 29867

Wasilewska, Janina and Urszula Krause

DISSIPATION OF SO2 GENERATED IN A STEELWORK INTO THE GROUND LAYER OF THE ATMOSPHERE. *(Rozprzestrzenianie sie SO2 emitowanego przez hute a w atmosferze przyziemnej). Text in Polish. Prace Inst. Hutniczych, 22(5):307-312, 1970. 20 refs.*

A method of calculating the dissipation of sulfur dioxide, generated in a steelwork, to the ground layer of the atmosphere is presented. The air pollution was calculated with the aid of a computer taking into account such factors as meteorological conditions, the source of pollution, and the constituents of the pollutant. The area measured for SO2 concentration extended over 112 sq km. The concentration was calculated at 411 points spaced 0.5 km apart, and located in a rectangular coordinate system. At all points, the SO2 concentration was measured separately for specific steelwork departments and conjointly for all emissions sources of the steelwork. The data obtained have been plotted in isoconic lines representing the SO2 concentration found in the ground layer atmosphere of the area surveyed.

12468 APTIC NO. 30126

Wilkniss, P. E. and D. J. Bressan

CHEMICAL PROCESSES AT THE AIR-SEA INTERFACE: THE BEHAVIOR OF FLUORINE. *J. Geophys. Res., 76(3):736-741, Jan. 20, 1971. 14 refs.*

Ion fractionation between fluorine and chlorine at the air-sea interface was investigated. Radiochemical experiments showed a decrease in the F/Cl ratio for laboratory aerosols produced from sea water. Marine aerosols showed an increase in the F/Cl ratio with a possible contribution from airborne dust contamination. Jet drops in the laboratory and naturally occurring marine jet drops showed little to no change. Radiochemical tracers also showed that drying of sea water droplets sometimes increased the F/Cl ratio of the salt residue, whereas acidification of the sea water always caused the residue to have a decreased ratio. The observed complex chemical behavior of fluoride in air-sea interactions suggests the necessity of taking new approaches in the laboratory and in field experiments. (Author abstract modified)

12469 APTIC NO. 29500

Yanagihara, Shigeru, Isao Shimada, Fumitake Chisaka, and Naoomi Yamaki

EXPERIMENT ON PHOTOCHEMICAL REACTION OF MOTOR EXHAUST GAS. *(Jidosha haikigasu no kogagaku hanno no jikken). Text in Japanese. Preprint, Society of Automobile Engineers of Japan, Inc., Tokyo, p. 131-140, 1970. 7 refs. (Presented at the Society of Automotive Engineers of Japan, Inc., Spring Meeting, Tokyo, 1970, Paper 15.)*

The photochemical reaction of motor exhaust gas in Japan was studied under high concentrations. An irradiation test under the concentration approaching that of the actual atmosphere was conducted using a chamber. The smog chamber equipment causes the photochemical reaction of motor exhaust irradiation with ultraviolet rays. The exhaust is diluted several thousand times with air. The dilution apparatus is of the venturi inhalation type and the dilution ratios are usually 1/500 1/5000. The analysis of exhaust gas is made using a nondispersive infrared analyses and a flame ionization detector. The measurements of carbon monoxide, hydrocarbons, sulfur dioxide, nitrogen dioxide, nitric oxide, oxidants, and aerosol are made using a wet continuous analytical meter after dilution. The leakage of gas from the chamber could be ignored; the mixture in the room was sufficient. For C2H4 and NO, generally a decrease in NO and an increase in NO2 just after the start of irradiation were found. Oxidants increased initially and again increased rapidly when NO2 began to decrease after reaching its peak. When the HC concentration to No was low, the reaction was slow and vice versa. With motor exhasut gas, the experiments were made using samples provided by automatic control operation under similar conditions. The same tendency as C2H4-NO was seen and the oxidant concentration increased with an increase in HC and decreased in a certain ratio in NO.

BASIC SCIENCE AND TECHNOLOGY

12470 APTIC NO. 29800

Atroshchenko, V. I., V. S. Bagdasaryan, and E. I. Perlov

METHOD OF CALCULATING EQUILIBRIUM COMPOSITIONS IN INTERACTION OF NITROGEN OXIDES WITH NITRIC ACID SOLUTIONS. *J. Appl. Chem. USSR (English translation from Russian of: Zh. Prikl. Khim.), 43(11):2409-2414, Nov. 1970. 7 refs.*

A method of successive approximations is presented for determining the equilibrium composition of nitrogen oxides over nitric acid solutions. The method involves calculating the degree to which the oxidation of the nitrose gas (alpha) is dependent on equilibrium conditions. A table of computer-calculated values of alpha enables the degree of oxidation to be determined with a relative error of 0.01-0.1%. When a relative error of 2-3% is permissible in the calculation, alpha can be found from a nomogram.

12471 APTIC NO. 30050

Bajema, Larry Lyn

SPECTROSCOPIC STUDIES OF PORPHYRINS, PHTHALOCYANINES, AND CS2 IN INERT MATRICES. *Washington Univ., Seattle, Dept. of Chemistry, Thesis (Ph.D.), Ann Arbor, Mich., Univ. Microfilms, Inc., 1971, 210p. 105 refs.*

The optical spectra of molecules in inert matrices was studied at low temperature. A porphyrin type molecule in rare gas matrices was examined by spectrometry. Spectra obtained for both zinc and free base phthalocyanines and zinc tetrabenzporphin showed that a matching of host and guest geometries was unnecessary for obtaining quasiline structure. When free base and zinc phthalocyanine absorption and fluorescence spectra were compared, a crystal field splitting of the electronic degeneracy of the metal complex occurred. An analysis of the negative results of a Zeeman experiment suggests that the porphyrin planes were aligned parallel to the target surface. The spectrum of carbon disulfide is discussed, and the first ultraviolet spectrum of CS2 in matrices is presented. The new and original research data are correlated with other knowledge of the molecule. Also, CS2 phosphorescence is discussed.

12472 APTIC NO. 28910

Bates, Richard D., Jr. and George W. Flynn

LASER-INDUCED VIBRATIONAL FLUORESCENCE IN NITROUS OXIDE. *J. Chem. Phys., 49(3):1432-1433, 1968. 9 refs.*

A measurement of the pressure-dependent relaxation time for the 001 vibrational level of nitrous oxide is reported. A thermalized sample of N20 was placed in a cell contained within the optical cavity of a Q-switched N20-helium-nitrogen laser; decay of the 001 population following the laser pulse was monitored by observing the 4.5 micron 001 to 000 fluorescence emitted from the sample cell at 90 deg to the laser axis. The mechanism for deactivation of the N20 001 state is probably vibration-vibration energy transfer to nearby bending modes as has been suggested for the corresponding carbon dioxide state. In addition to collisions with nitrogen and helium, collisions of 001 state molecules with hot electrons and with other N20 molecules not in the ground 000 state can be expected to become important in the laser system. In good agreement with two recent spectrophone measurements, the 001 lifetime extrapolated to 1 atm is .00000196 sec.

12473 APTIC NO. 29890

Beaumont, M.

EXPERIENCE WITH INDUSTRIAL MULTI-FLUE CHIMNEYS OF 100-200 IN HEIGHT. *J. Inst. Fuel (London), 44(361):92-98, Feb. 1971. 11 refs.*

Practical problems in the use of multi-flue chimneys and operational design problems caused by low temperatures and high velocities of the flue gases are discussed. The three main types of multi-flue chimneys, classified by the materials used in construction of the windshield and internal flues, are steel windshield, steel flues; reinforced concrete windshield, steel flues; and reinforced concrete, moler brick flues. Problems causing failure of moler brick flues from a lack of specialist design knowledge are discussed, as well as the insulation requirements of steel flues, the use of stainless steel, the provision of adequate thermal expansion control, outlet configuration, gas velocity, and maintenance problems. It may be possible to reduce the bore of existing chimneys and convert them to effective multi-flue installations with new boiler installations. Moler linings should not be used when there is liable to be positive flue gas pressure at any time in the flue system, when the diameter of the liner is less than 75 cm, or when there is any likelihood of an explosion of the flue gases within the liner. Steel liners can be used when moler linings cannot, as well as in systems where the flue gas pressure is always negative. Steel liners can be made to any height and in diameters of up to 14 ft if they are of shop-welded construction.

12474 APTIC NO. 29881

Billingsley, J. and A. B. Callear

KINETICS AND MECHANISMS OF THE VIBRATIONAL RELAXATION OF NOX2PI(V EQUALS 1) IN THE TEMPERATURE RANGE 100-433 K. *Trans. Faraday Soc., 67(578):257-271, Feb. 1971. 18 refs.*

The first vibrational level of NOX2Pi was excited with an intense light flash and relaxation times measured from 100-433 K. Contrary to theoretical predictions, the temperature coefficient for relaxation was negative. It is postulated that the potential energy of the resonance for an electronic-vibrational transition is orientation dependent; the lowest resonance may correspond to the most stable configuration of the (NO)2 dimer. The role of ternary collisions is probably to remove NOX2Pi(v equals 1) as stabilized dimer. From the dissociation constants of the dimer, rates of bimolecular dissociation were computed assuming that k2 corresponds to the rate coefficient for dimerization. The magnitudes of the bimolecular rate coefficients were consistent with the energy transfer model, provided all degrees of freedom can contribute efficiently to bond rupture. Rate coefficients for vibrational exchange from NO to N2 were measured at 298 and 433 K. Evidence for vibrational equilibrium was found in experiments with NO + CO mixtures at low temperatures. (Author abstract modified)

12475 APTIC NO. 29551

Bouffant, L. Le

OBSERVATIONS ON THE FIGHT AGAINST DUST BY MEANS OF SALINE AEROSOLS. *(Observations sur la lutte contre les poussieres au moyen d aerosols salins). Text in French. Lab. Central des Services Chimiques de L Etat, Paris (France) and Inst. National de Securite pour la Prevention des Accidents du Travail et des Maladies Professionnelles, Paris (France), Colloq. Securite Sociale Serv. Prevent., 3rd, Paris, France, 1955, p. 52-54. (Nov. 3-5.)*

In studying the reduced particle content that occurs when a sodium chloride aerosol is introduced into a dust-laden atmosphere, a change in numerical concentration as a function of time was observed in a 60-l chamber with equal concentrations by weight (but different particle sizes) of carbon and NaCl (0.5 to one micron carbon, 0.2 micron NaCl). Two sets of results in calm and turbulent atmospheres, were recorded, as well as increases in average particle sizes effected by NaCl measured at certain time intervals. This phenomenon could be utilized in dusty working areas for the benefit of the personnel by employing suitable concentrations of saline aerosols for the generation of increased particle size. When inhaled, the larger particles are retained in the upper part of the respiratory system and do not penetrate into the lung.

12476 APTIC NO. 29849

Bouley, G., R. Roudier, and J. Godin

INSTRUMENT FOR STUDYING THE ACTION OF EXHAUST GASES DILUTED IN THE AIR, ON BACTERIAL, CELLULAR, AND TISSULAR CULTURES. *(Appareillage pour l etude de l action des gaz d echappement dilues dans l air sur les cultures bacteriennes, cellulaires et tissulaires). Text in French. Pollut. Atmos. (Paris), 12(48):236-238, Oct.-Dec. 1970. 7 refs.*

A device is described which allows the study of the effects of exhaust gases on bacteria and tissue cultures and on cellular cultures. The device allows these two types of research to be conducted simultaneously. It contains a three-way stop clock which distributes the polluted air and control air towards a section reserved for each of these studies. The control continuously covers carbon dioxide, carbon monoxide, and hexane; it covers hydrogen oxide, aldehydes, and sulfur dioxide in a discontinuous manner. (Author summary modified)

12477 APTIC NO. 29610

Bowman, Craig T.

INVESTIGATION OF NITRIC OXIDE FORMATION KINETICS IN COMBUSTION PROCESSES: THE HYDROGEN-OXYGEN-NITROGEN REACTION. *Combust. Sci. Technol., 3(1):37-45, 1971. 23 refs.*

An experimental and analytical investigation of the kinetics of formation of nitric oxide in shock-induced combustion of hydrogen-oxygen-nitrogen mixtures has been carried out. In the experimental study, concentration time-histories of NO, OH and H2O were measured during reaction using spectroscopic techniques. Experimental concentration profiles were obtained for an oxidizer rich and a fuel-rich mixture for initial post-shock temperatures in the range 2150-2800 K and for an initial post-shock pressure of 2.2 plus or minus 0.3 atm. In the analytical study, time rates of change of species concentrations and thermodynamic properties during reaction were calculated by numerically integrating the coupled reaction kinetic, state and energy equations. Calculated concentration profiles were compared with experimental profiles to obtain information on the reaction mechanism for formation of NO. Observed NO formation rates in both the oxidizer-rich and the fuel-rich mixture were consistent with a two-reaction mechanism for nitrogen chemistry: O plus N2 forms and is formed from NO plus N; N plus O2 forms and is formed from NO plus O. There was no evidence to suggest that reactions other than these were of importance in the NO formation mechanism. NO concentration profiles obtained from two simplified models for NO formation were compared with experimental profiles. It was found that under certain conditions these simplified models predicted NO formation rates substantially lower than observed experimentally. (Author abstract)

12478 APTIC NO. 30115

Braslavsky, Silvia and Julian Heicklen

PHOTOLYSIS OF THIOLANE VAPOR. *Can. J. Chem., 49(8):1316-1320, 1971. 7 refs.*

The photolysis of thiolane vapor was studied at room temperature with 2139 A radiation. Products of the reaction were analyzed with a Gow-Mac Model No. 40-05D gas chromatograph utilizing a thermistor detector and 1/4-inch diameter columns. The major product was ethylene, whose quantum yield decreased as the pressure was increased. Next in importance were 1-butene, cyclopropane, and ethane. Also produced were methane, 1,3-butadiene, thiirane, hydrogen, propane, n-butane, c-C4H8, c-C3H6, CH2CHSH, 1-C4H9SH, polymer, and an unstable product tentatively identified as 1-butene-1-thiol. All products were initial products of the reaction. Experiments with added C3H6 showed the absence of sulfur atoms. The results are interpreted in terms of two excited states and an intermediate which might be the diradical CH2CH2CH2CH2S. (Author abstract modified)

12479 APTIC NO. 29994

Braun, D. and J. W. Hiby

THE ABSORPTION COEFFICIENT OF A GASEOUS SUBSTANCE ON A SWARMING FILM. *(Der gasseitige Stoffuebergangskoeffizient am Rieselfilm). Text in German. Chem. Ing. Tech., 42(6):345-349, March 1970. 11 refs (Presented at the Jahrestreffen der Verfahrens-Ingenieure, Bayreuth, West Germany, Sept. 30-Oct. 2, 1969.)*

The absorption of a substance contained in a stream of air by the free surface of a swarming film was determined by measuring the absorption of ammonia contained in a stream of air by diluted sulfuric acid trickling down the inner walls of a tube in a concurrent and countercurrent flow of both phases. The effect of the water vapor contained in the gas mixture on the absorption coefficient was also investigated. The variables in the experimental arrangement were the flow velocities of both phases, the tube length, and the humidity of the inflowing gas. Local absorption coefficients and coefficient averages for the various tube lengths were as Sherwood numbers correlated with all variables. The experimental arrangement and the evaluation method used are described and the effect of humidity, the partial absorption coefficient of the gaseous phase, and the effect of the relative tube length and the Reynolds numbers of the gas and of the liquid on the median and the local absorption coefficient are calculated.

12480 APTIC NO. 30079

Bulger, J. S. and J. M. Goodings

ELECTRON ENERGY LOSS SPECTRA OF NO2 AND SO2. *Can. J. Phys., 49(11):1437-1444, June 1, 1971. 23 refs.*

Electron energy loss data are presented for carbon dioxide, nitrogen dioxide, and sulfur dioxide at scattering angles of 0 and 60 deg and impact energies in the range 30-140 eV. Energy selectors of the 127 deg type were used to detect energy losses in the range 0-20 eV. The energy loss data unify and supplement previous work involving a variety of techniques. They are discussed with reference to the Walsh correlation diagram, particularly with regard to the molecular orbital with an unusually large variation of binding energy with bond angle. Below the ionization potential, the energy loss spectra are in good agreement with optical data and electron scavenging measurements at threshold; however, the Rydberg transitions have not reached their maximum relative intensities at the incident electron energies used. Excitation peaks corresponding to the ground state ion are observed in CO2 and SO2; for

NO2, a peak appearing at 9.7 eV is attributed to an excitation of the neutral molecule, however, since direct excitation of the ground state ion involves a large change in bond angle. Compared with CO2 and NO2, the SO2 molecule has an extra closed shell of 8 electrons such that the excitation of SO2+ appears to be dominated by autoionization at low incident electron energies. As the energy is increased to 138 eV, four peaks emerge which agree with previous photoelectron and Penning ionization data. (Author abstract)

12481 APTIC NO. 29750

Callear, A. B. and P. M. Wood

RATES OF ENERGY TRANSFER FROM N2 A CUBED SIGMA(+) U TO VARIOUS MOLECULES. INITIAL AND FINAL QUANTUM STATES IN THE TRANSFER TO NOX SQUARED PI AND HG(6 1S SUB O), AND VIBRATIONAL RELAXATION OF N2 A CUBED SIGMA(+) U (V EQUALS 1) IN HELIUM. *Trans. Faraday Soc., 67(578):272-288, Feb. 1971. 26 refs.*

A technique of monochromatic flash spectroscopy with the resonance radiations of xenon (1470 A) and krypton (1236 A) is described. The production and decay of N2A cubed sigma(+)u (v equals 0.1) was monitored photoelectrically from the sensitized fluorescence of either nitric oxide or mercury. Rate coefficients were recorded; a significant difference in the rates of deactivation of the v equals 0 and 1 states of N2 A cubed sigma(+)u was found only for carbon monoxide. Except in the transfer to ammonia and mercury the vibrational relaxation of N2 A cubed sigma(+)u (v equals 1) was induced by collision prior to its deactivation, and a rate coefficient of 1.2 times 10 to the minus 15 power cu cm/molecule/s was recorded. The initial and final states were correlated for the transfer to NO. The results were also analyzed with a mathematical model in which the transition probabilities were proportional to the products of the two Franck-Condon factors and the mean density of states associated with particular reaction channels. Transfer from N2 A cubed sigma(+)u to Hg populates the Hg(6 3P sub 0) state directly to the extent of about 25%. From a comparison of the simultaneous NO gamma and Hg 2537 A emissions, iodine was detected via absorption of the 2060 A line by kinetic spectroscopy, in the deactivation of N2 A cubed sigma(+)u by methyl iodide. (Author abstract modified)

12482 APTIC NO. 29919

Chow, H. Y. and T. T. Mercer

CHARGES ON DROPLETS PRODUCED BY ATOMIZATION OF SOLUTIONS. *Am. Ind. Hyg. Assoc. J., 32(4):247-255, April 1971. 10 refs.*

The charges on droplets produced by air-blast atomization were determined for 0.1%, 1.0%, and 10% concentrations of sodium chloride-uranium solute in water. A parallel-plate mobility spectrometer was used to measure the mobility of residual solid particles, and simultaneous size distribution measurements made it possible to calculate the charge on the droplet from which the solid particle was derived. The relationship between the average number of electronic units of charge on a droplet and its diameter is given. Droplet charges were not symmetrical with respect to polarity, an effect which was also related to concentration. The results are compared with those reported by others, and their practical significance is discussed. (Author abstract modified)

12483 APTIC NO. 30111

Cohen, E. Richard and Edward U. Vaughan

APPROXIMATE SOLUTION OF THE EQUATIONS FOR AEROSOL AGGLOMERATION. *J. Colloid Interface Sci., 35(4):612-623, April 1971. 22 refs.*

The integrodifferential equation for the agglomeration and settling of aerosols is reduced to a set of ordinary nonlinear equations for the moments. In general these equations do not form a closed set. By choosing a specific functional form for the distribution of particle volumes, the parameters of which are functions of time, the system is closed since all the moments are expressible directly in terms of the chosen parameters, and an n-parameter function then leads to a set of n ordinary differential equations. he specific case of a log-normal distribution for particle sizes is discussed in detail. For the case of pure Brownian agglomeration analytical solutions are obtained and the asymptotic distribution is explored. When gravitational settling and agglomeration are included, the system may be readily solved numerically. (Author abstract)

12484 APTIC NO. 29654

Crawford, O. H. and A. Dalgarno

THE SCATTERING OF THERMAL ELECTRONS BY CARBON MONOXIDE. *Proc. Phys. Soc. London At. Mol. Phys., 4(4):494-502, April 1971. 19 refs. 29291 DelBene, Janet E. MOLECULAR ORBITAL STUDY OF NH2, NO2, AND NF2. J. Chem. Phys., 54(8):3487-3490, April 15, 1971. 8 refs.*

The orthogonality constrained basis set expansion method was used to determine SCF wavefunctions for ground and lower excited doublet states amidogen of (NH2), nitrogen dioxide (NO2), and nitrogen fluoride (NF2). The calculations on NO2 and NF2 were performed using a minimal basis set, while both minimal and extended bases were used in the study of NH2. Geometries and dipole moments of the various states were obtained and found to be in good agreement with available experimental data. Calculated vertical and 0-0 transition energies in these systems were also found to approximate the experimentally determined excitation energies. (Author abstract)

12485 APTIC NO. 29674

Douglass, Irwin B., Richard V. Norton, Roger L. Weichman, and Robert B. Clarkson

METHANESULFENYL CHLORIDE. V. THE SPONTANEOUS DECOMPOSITION OF METHANESULFENYL CHLORIDE AND METHYLSULFUR TRICHLORIDE. *J. Org. Chem., 34(6):1803-1807, June 1969. 15 refs.*

Methanesulfenyl chloride, CH3SCl, begins to decompose after standing for a few hours at room temperature. A spectrometer was used to obtain PMR (Proton Magnetic Resonance). Major products of the decomposition were methyl chloride, methyldisulfur chloride, methyl disulfide, methyl trisulfide, and methyl tetra-sulfide. Minor peaks in the spectrum corresponded to the delta chemical shifts of methyl chloromethyl disulfide and dichloromethyl methyl sulfide. Other products were hydrogen chloride, sulfur dichloride, elemental sulfur, and, in some cases, an unidentified solid. Methyl sulfur trichloride decomposed rapidly when the crystalline solid was heated a few degrees above room temperature. The PMR spectrum of the decomposition mixture indicated that the principal products are chloromethanesulfenyl chloride (ca. 60%) and methanesulfenyl chloride (ca. 20%). Other products identified by their peaks were methyldisulfur chloride, methyl trisulfur chloride methyltetra-sulfur chloride, bischloromethyl disulfide, and dichloromethanesulfenyl chloride. In addition, hydrogen chloride and sulfur dichloride were also products of the decomposition. Uncertainty exists as to whether the decomposition of CH3SCl takes place by an ionic or free-radical mechanism. An ESR (Electron Spin Resonance) study of the decomposition showed no signals to indicate an appreciable concentration of free radicals. Methyl disulfide, irradiated at liquid nitrogen temperature, produced an ESR spectrum with clearly defined signals believed to indicate the CH3S radical. This radical appears to be highly reactive and cannot be stabilized on Vycor glass at room temperature. The failure to observe ESR signals in decomposing CH3SCl may possibly be due to the high reactivity of radical intermediates resulting in a low steady state concentration. (Author abstract modified)

12486 APTIC NO. 29653

Drew, Robert T. and Sidney Laskin

A NEW DUST-GENERATING SYSTEM FOR INHALATION STUDIES. *Am. Ind. Hyg. Assoc. J., 32(5):327-330, May 1971. 4 refs.*

In a program of inhalation studies with industrial plastic dusts, a generating system has been developed which permits consistent levels of respirable particles. With other devices the material would not redisperse readily, having high packing characteristics and large agglomerate particle sizes. Also, evidence of high electrostatic charge of the particles was seen by their deposition on glass, plastic, and other surfaces. The development of a fluidizing dust generator destroyed electrostatic charge and break agglomerates by use of inertial forces. In this system, pre-ground dust is mixed in the fluidized generator with a high-speed fan; the air-dust mixture is aspirated into a small baffling chamber and then piped directly into the inhalation chamber. The design of this system and its application to preliminary inhalation studies are discussed. Concentration and particle size data are presented. (Author abstract modified)

12487 APTIC NO. 29702

Erdos, E.

KINETICS OF THE REACTION BETWEEN THE SOLID SODIUM CARBONATE AND THE GASEOUS SULPHUR DIOXIDE. VI. STATISTICAL MOLECULAR MODEL OF THE EXCESS KINETIC FUNCTION. *Collection Czech. Chem. Commun. (Prague), 36(2):485-493, Feb. 1971. 5 refs.*

A statistical molecular two-dimensional growth model is proposed for the reaction between solid sodium carbonate and gaseous sulfur dioxide, based on the assumption that the distance between the molecules and the growth centers and the velocity of the reaction front advancement exhibit a normal distribution. The model proposed perfectly reproduces the course of the excess kinetic function which has been found with this reaction by experiment. The model takes into account even the effect of the gas phase on the reaction rate and interprets the reaction half-time as the mean square time within which the reaction front advancing from the growth center reaches the molecule of the solid. Limitations of the proposed model are discussed. (Author abstract)

12488 APTIC NO. 29871

Ershov, N. I., T. V. Zueva, and Ya. T. Eidus

HETEROGENEOUS CATALYSIS INVOLVING ASTOICHIOMETRIC COMPONENTS. IV. INITIATION EFFECTS OF CARBON MONOXIDE AND OXYGEN OXIDE IN THE HYDROPOLYMERIZATION OF PROPENE AND ISOBUTENE. *(Geterogennyy kataliz s uchastiyem astekhiometricheskikh komponentov. IV. Initsiruyushchiye effekty okisi ugleroda i kisloroda v reaktsiyakh gidropolimerizatsii propilena i izobutilena). Text in Russian. Kinetika i Kataliz, 12(1):152-155, 1971. 9 refs.*

In studying the hydropolymerizations of propylene and isobutylene on a cobalt-clay catalyst (1:2), the value of the initiation effect, I, of the astoichiometric components CO and oxygen was determined. In propylene hydropolymerization, in the temperature interval 20-180 deg and in the presence of .01% CO, the maximum I equal to 11 was observed at 140 deg. At temperatures below 140 deg the effect practically disappeared (I equals .5-1.7). For 2% oxygen, I was about 5 at 100 deg. In isobutylene hydropolymerization, at temperatures below 100 deg and for .01% CO, I was 3.5-4 and for 2% oxygen, 5-6.

12489 APTIC NO. 29530

Fink, William H.

CALCULATIONS OF THE GROUND AND EXCITED STATE ENERGIES OF NO2. *J. Chem. Phys., 54(7):2911-2914, April 1, 1971. 10 refs.*

The basic picture of the spectrum of nitrogen dioxide as given by the recent calculations of electronic levels is reinforced and extended by the calculations reported here. Nine of these are SCF calculations; the remainder are roots of a configuration interaction calculation performed using the SCF orbitals calculated for the ground state as an expansion set. The configuration interaction was performed within the A-sub-1 irreducible representation in order specifically to locate the first excited state of the same symmetry species as the ground state. A 3s-like atomic orbital was included in the basis set in order to more adequately represent molecular orbitals tending toward Rydberg levels. The SCF energy for the ground state was calculated to be -203.907 a.u. The configuration interaction calculated yielded an energy of -203.949 a.u. for the ground state. Probable assignments of the electronic transitions involved in the spectrum of nitrogen dioxide are discussed. (Author abstract modified)

12490 APTIC NO. 29700

Gardiner, W. C., Jr., M. McFarland, K. Morinaga, T. Takeyama, and B. F. Walker

INITIATION RATE FOR SHOCK-HEATED HYDROGEN-OXYGEN CARBON MONOXIDE- ARGON MIXTURES AS DETERMINED BY OH INDUCTION TIME MEASUREMENTS. *J. Phys. Chem., 75(10):1504-1509, May 13, 1971. 22 refs.*

Induction times for OH were determined in incident shock wave experiments with hydrogen: oxygen: carbon monoxide: argon mixture in a ratio of 1:5:3:91 over the temperature range 1400-2500 K. The data are compared to similar experiments with H2:O2:Ar equal to 1:5:94 and used to derive a rate constant for the chain initiation reaction between CO and O2 to yield CO2 and O. Resulting Arrhenius expressions are compared to previous measurements. (Author abstract modified)

12491 APTIC NO. 30024

Golden, David M.

STANDARD STATES FOR THERMOCHEMICAL AND ACTIVATION PARAMETERS. *J. Chem. Educ., vol. 48:235-237, April 1971. 2 refs.*

A good deal of confusion exists as to standard states, referred to when computing entropy changes for a reaction from a van t Hoff plot of ln K versus l/T, or for activation (delta S(++)) when computing entropy from an Arrhenius plot of ln k versus 1/T. This confusion arises only in those gas phase reactions with a mole change (delta n not equal to O), where the constant must be related to some type of concentration units. Various relationships are discussed which are subject to errors when considering either liquid or high pressure gas phase reactions. For any reaction where the entropy and energy changes are the same in gas phase and solution, the equilibrium constants will differ in the two phases by e(delta n).

12492 APTIC NO. 29488

Gucker, Frank T. and Horng-Min Lin

A METHOD OF VERIFYING THE COEFFICIENTS A-SUB-N AND B-SUB-N OF THE MIE THEORY OF LIGHT SCATTERING BY NONABSORBING ISOTROPIC SPHERES. *J. Colloid Interface Sci., 35(1):139-142, Jan. 1971. 8 refs.*

The scattering coefficients, functions of the particle size parameter and of the particulate refractive index, of the terms of Mie s series for the intensity of electromagnetic radiation scattered by isotropic spheres are complex numbers. If the spheres are nonabsorbing, van de Hulst showed that each value of the complex scattering coefficients lies on a circle in the complex plane with its center at (1/2, Oi) and a radius of 1/2. This relationship provides a simple method of checking the self-consistency of values of the coefficients, and the advantages and limitations of this application are discussed. (Author abstract modified)

12493 APTIC NO. 29803

Hedley, A. B., A. S. M. Nuruzzaman, and G. F. Martin

PROGRESS REVIEW NO. 62: COMBUSTION OF SINGLE DROPLETS AND SIMPLIFIED SPRAY SYSTEMS. *J. Inst. Fuel (London), 44(360):38-54, Jan. 1971. 225 refs.*

Over 200 papers concerning the combustion processes of atomized fuels are discussed under the headings of single droplets, droplet sprays, monodisperse sprays, and polydisperse sprays. Quasi-steady state theories of single droplets cannot adequately explain the mechanism of combustion and the recent experimental results emphasize the unsteady nature of combustion. More information is required on such subjects as the mechanics of mixing, droplet interference, and flame stabilization before a rigorous theoretical treatment of spray combustion can be attempted satisfactorily. (Author abstract modified)

12494 APTIC NO. 29873

Hutchinson, P., G. F. Hewitt, and A. E. Dukler

DEPOSITION OF LIQUID OR SOLID DISPERSIONS FROM TURBULENT GAS STREAMS: A STOCHASTIC MODEL. *Chem. Eng. Sci., vol. 26:419-439, March 1971. 34 refs.*

A model for deposition of particles and droplets from turbulent gas streams is presented which is largely free of the assumptions and limitations of earlier methods. In particular, the model provides for the possibility that eddy and particle motion are not identical, that the random process associated with turbulence results in particle motions in all directions, and that the process of penetration in the wall region is also a stochastic process. The theory is tested against data which cover a wide range of conditions including particle size from 0.8-125 micron; Reynolds number from 5000 to 300,000; gas to particle density ratio of 1.6 times 0.0001 to 2.5 times 0.001; and tube sizes from 0.375 to 2.5 in. in diameter. Agreement is quite satisfactory in all cases. The rate of deposition depends on the Reynolds number, the particle-to-tube diameter ration, the gas-to-particle density ratio, and the distance down the tube, measured in tube diameters. (Author abstract modified)

12495 APTIC NO. 29611

Jones, Peter F. and Seymour Siegel

QUENCHING OF NAPHTHALENE LUMINESCENCE BY OXYGEN AND NITRIC OXIDE. *J. Chem. Phys., 54(8):3360-3366, April 15, 1971. 25 refs.*

The quenching of naphthalene-h8 and naphthalene-d8 luminescence by oxygen and nitric oxide in the absence of molecular diffusion is investigated. By measurement of the dependence of fluorescence and phosphorescence yields and lifetimes on quencher concentration, it is possible to separate the effects of singlet and triplet electronic state quenching and to determine the critical quenching radii. No static quenching of naphthalene fluorescence is observed for O2 concentrations of up to 0.25 M. Thus, the corresponding value for the critical quenching radii in the Perrin formula is less than or equal to 7.1 A. Conversely, the concentration dependence of naphthalene-h8 and naphthalene-d8 triplet state quenching by O2 is in excellent agreement with tht Perrin formula, and the corresponding values for the critical quenching radii are 9.9 plus or minus 0.3 and 9.8 plus or minus 0.3A, respectively. Contrary to the Perrin model, but in agreement with the theory of quenching by an exchange interaction, the quenching process is competitive with the normal decay rate, and the phosphorescence decay curves become nonexponential with increasing O2 concentration. The rate constant for naphthalene triplet-stage quenching by O2 decreases upon the deuteration of naphthalene. This suggests that enhanced intersystem crossing, and not energy transfer, is the dominant triplet-state quenching mechanism, at least for naphthalene O2 separations approximately equal to 10A. The concentration dependence of naphthalene-h8 and naphthalene-d8 fluorescence quenching by NO is in excellent agreement with the Perrin formula, and the corresponding critical quenching radii values are 12.3 plus or minus 0.3A and 13.0 plus or minus 0.3A, respectively. Fluorescence quenching by NO (80% decrease at 0.3M NO) has no effect on the fluorescence lifetime of naphthalene, which indicates that quenching occurs in less than 5 nsec. Possible causes for the greater efficiency of fluorescence quenching by NO than by O2 are discussed. The value of critical quenching radii for naphthalene triplet-state static quenching by NO cannot be determined with certainty because of the possibility that the excited singlet state is quenched by NO cannot be determined with certainty because of the possibility that the excited singlet state is quenched directly to the ground state. But the value of critical quenching radii for naphthalene triplet tate quenching must be less than or equal to that fr fluorescent singlet-state quenching.

12496 APTIC NO. 29799

Joyner, R. W., C. S. McKee, and M. W. Roberts

THE ADSORPTION OF CARBON MONOXIDE ON CU(001) LEED AND AUGER EMISSION STUDIES. *Surface Sci., 26(1):303-309, 1971. 20 refs.*

Based on LEED and Auger electron spectroscopy studies, a model is proposed for the adsorption of carbon monoxide at low pressures on a single crystal surface (001) of copper. The CO is adsorbed on Cu(001) at 295 K but completely desorbed at 373 K, with a heat of desorption of approximately 80 kJ reciprocal mole. The LEED patterns indicate that adsorption occurs into two surface structures c(2 times 2) and p(2 times 2). It is suggested that the surface structures form by a surface diffusion process and that the centering molecule of the c(2 times 2) structure can be adsorbed only when the p(2 times 2) structure is incomplete. The Auger studies of the adsorbed CO show an oxygen peak (525 eV) but no carbon. Laser simulation studies support the model. (Author abstract modified)

12497 APTIC NO. 30016

Kirchner, K., H. Kastenhuber, and L. Biering

THE REACTION KINETICS OF MERCAPTAN WITH OZONE IN THE PPM RANGE. *(Zur Kinetik der Reaktion von Mercaptan mit Ozon im ppm-Bereich). Text in German. Chem. Ing. Tech., 43(10): 626-629, 1971. 15 refs.*

Using a 20-l flow reactor, the velocity constant for the reaction of ethyl mercaptan with ozone in the ppm range was determined by the method of concurring reactions. First, a mercaptan/nitrogen flow and an airflow were passed through the reactor. The mercaptan concentration was continuously determined by gas chromatography and potentiometry. Subsequently, the ozone flow was added; the initial ozone concentration was also continuously monitored. As soon as the operation of the reactor was stationary the aldehyde concentration was continuously measured by gas chromatography until a constant end value was established. As comparative reagents, hexene and isobutene were added in various concentration ratios. Using velocity constants for the comparative substances taken from the literature, a velocity constant, kM equals 2400 plus or minus 800 l/mol sec, was obtained for the reaction of ethyl mercaptan with ozone.

12498 APTIC NO. 29943

Klimek, Maria and Iwo Pollo

REDUCTION OF MAGNESIUM SULPHATE BY CARBON MONOXIDE. *(Redukcja siarczanu magnezowego tlenkiem wegla). Text in Polish. Chem. Stoso. Ser. A, 14(4):449-462, 1970. 19 refs.*

The kinetics of magnesium sulfate decomposition were investigated using carbon monoxide as a reducing agent. The reduction reaction was studied in the temperature range of 650 to 950 C at 650 mm Hg CO pressure. The temperature, concentration of CO, and flow rate effected the MgSO4 reaction. The effect of these parameters on the decomposition rate was interpreted by the empirical equation a equals 1 e to the minus kt(to the nth) which expressed the dependence of the conversion of MgSO4 on the time of decomposition over the whole range of the process.

12499 APTIC NO. 30051

Kolpakov, Yu. D. and V. P. Skripov

DETERMINATION OF THE DISPERSION OF SCATTERING NEAR THE CRITICAL POINT USING THE SCATTERED LIGHT INDICATRIX. *Opt. Spectry (USSR) (English translation from Russian of: Opt. i Spektroskopiya), 28(4):364-366, April 1970. 13 refs.*

The scattering dispersion index can be determined by formulas from the angular dependence of the intensity of scattered radiation. The scattering dispersion index was calculated in several immiscible solutions including n-amyl alcohol-nitromethane, argon, and carbonic acid. Experimental results agreed well with calculated results for different distances from the critical temperature.

12500 APTIC NO. 29778

Langley, K. F. and W. D. McGrath

THE ULTRA-VIOLET PHOTOLYSIS OF OZONE IN THE PRESENCE OF MOLECULAR OXYGEN. *Planetary Space Sci., 19(4):416-418, April 1971. 12 refs.*

The ultra-violet photolysis of ozone produces O(1D) atoms and O2(1 delta (g)). The efficiency of O2(1 sigma(+)g) formation, the energy-exchange reaction, and the rate constant for quenching of O(1D) by O2 are discussed. The reaction between O2(1 sigma(+)g) with ozone and the quenching were investigated with a photolysis/kinetic spectroscopy system. Various mixtures were studied including O3/argon and O3/nitrogen. The fraction of ozone decomposed by flash and fast reactions was determined, as well as the limiting values. The quenching of O(1D) by oxygen was efficient and is a major atmospheric source of O2(1 sigma(+)g). Other quenching mechanisms, in which molecular oxygen was formed in a state other than 1 sigma(+)g, could produce vibrationally excited oxygen in its electric ground state or 2(1 delta(g)).

12501 APTIC NO. 29494

Matsen, John M. and Barry L. Tarmy

SCALE-UP OF LABORATORY FLUID-BED DATA: THE SIGNIFICANCE OF SLUG FLOW. *Chem. Eng. Progr. Symp. Ser., 66(101):1-7, 1970. 13 refs.*

An important characteristic of fluidized beds for successful scaling is the regime of gas flow through the bed governing gas solid contacting. The several flow regimes are particulate fluidization, spouting, grid-controlled bubbling, and slugging beds. Many fluid-bed pilot plants use the slug-flow regime. Mathematical models have been developed for the size, rise velocity, and gas exchange rate of bubbles present. Residence time is independent of superficial gas velocity. Another critical factor is bubble spacing which, combined with a material balance, can determine bubble length. Other factors can also be theoretically determined, including minimum slugging velocity, maximum column diameter, gas flow velocity through a slug, axial cloud penetration, and effective space time. The models represent a stable case to which many systems will degenerate by bubble coalescence in small-diameter beds. An example is given to demonstrate the validity of the models. Scale-up criteria may be developed for specific systems of interest. For example, for the case of a slow catalytic reaction, bed height and superficial velocity should be scaled up proportionally to the first power and square root of the vessel diameter, respectively.

12502 APTIC NO. 29964

Moskalenko, N. I.

EXPERIMENTAL FUNCTIONS OF INTEGRAL ABSORPTION IN H2O, AND CO2, N2O, CH4, CO, NO VAPOUR BANDS. *(Eksperimental nyye funktsii integral nogo pogloshcheniya v polosakh parov H2O, CO2, N2O, CH4, CO, NO). Text in Russian. Izv. Akad. Nauk SSSR, Fiz. Atmosfery i Okeana, 7(3):344-348, 1971. 14 refs.*

The results of determination of total absorbances of the absorption bands of atmospheric gases (water vapor, carbon dioxide, nitrous oxide, carbon monoxide, and methane) as functions of the absorber concentration w and equivalent pressure P sub e are presented. Temperature was 300 deg and pressure varied between 0.001 10 atm. At w lower than 1000 atm cm for P sub e higher than 8 atm, integral absorbance did not depend on pressure. In the region of absorber concentrations studied (w up to 1000 atm), variation of temperature from 220 to 400 deg did not have substantial effect on integral absorbance.

12503 APTIC NO. 30085

Moss, Owen R.

SHAPE FACTORS FOR AIRBORNE PARTICLES. Am. Ind. Hyg. Assoc. J., 32(4):221-229, April 1971. 32 refs.

Shape factors for dry aerosol particles generated from one percent solutions by weight of sodium chloride, uranine, or combinations of these two compounds were measured. A factor was obtained for each aerosol, relating particle projected area diameter to aerodynamic diameter, mass, and resistance to viscous flow. The density of dry uranine aerosol particles was calculated to be 1.51 plus or minus 0.12 gm/cu cm, or essentially the same as the material s bulk density. This value is very close to the accepted values reported in the literature. (Author abstract modified)

12504 APTIC NO. 29917

Ramachandran, P. A.

SIMULTANEOUS ABSORPTION OF TWO GASES ACCOMPANIED BY REVERSIBLE INSTANTANEOUS CHEMICAL REACTIONS. *Chem. Eng. Sci., vol. 26:349-355, March 1971. 3 refs.*

The problem of simultaneous absorption of two gases accompanied by reversible instantaneous chemical reactions is considered. Analytical equations, based on the penetration theory, are derived for the rates of absorption of the two gases. The solution is valid when the diffusivities of all the species are assumed to be the same. The theoretical aspects of the problem of simultaneous absorption of hydrogen sulfide and carbon dioxide in amine solutions under equilibrium reaction conditions are also considered. (Author abstract modified)

12505 APTIC NO. 29666

Razumovsky, S. D., O. N. Karpukhin, A. A. Kefeli, T. V. Pokholok, and G. H. Zaikov

THE REACTION OF OZONE WITH SOLID POLYSTYRENE. *(Reaktsiya ozona s tverdym polistirolom). Text in Russian. Vysokomol. Soedin., Ser. A, 13(4):782-790, 1971. 16 refs.*

The reaction of ozone with solid polystyrene was studied. An Infared Spectra and a functional group analysis showed that carbonyl, peroxide, and carboxyl groups accumulate on the surface of polystyrene. The rate of the reaction was proportional to the ozone concentration and surface area. The gross quantity of functional groups was equivalent to 0.7 + or 0.2 of the ozone which was used during the reaction. F. P. R. showed the presence of two kinds of free radicals in the reaction products, one of which was a peroxide radical. Intermolecular crosslinks were formed in polystyrene as a result of the ozone reaction. Several possible reaction mechanisms were proposed and the effective rate constants of several reaction stages were calculated.

12506 APTIC NO. 29548

Rose, H. E.

SOME OBSERVATIONS ON THE ABNORMAL AGGLOMERATION OF CARBON BLACK AND OF GRAPHITE POWDER. *(Quelques observations sur une agglomeration anormale du carbon black et des poudres de graphite). Text in French. Lab. Central des Services Chimiques de L Etat, Paris (France) and Inst. National de Securite pour la Prevention des Accidents du Travail et des Maladies Professionnelles, Paris (France), Colloq. Securite Sociale Serv. Prevent., 3rd, Paris, France, 1955, p. 34-41. (Nov. 3-5.)*

Carbon black powder shows characteristics of agglomeration which differ from those of graphite powder. Carbon black particles are spherical in shape, whereas the graphite ones are mostly in the form of circular discs. Other characteristics relating to agglomeration include the void, or ratio between the volume of empty space between the particles which fill a receptacle and the total volume of the receptacle; the spacing factor, or ratio between the center distance of the particles and their diameter; and the apparent density, expressed in grans of material per cm of the volume of the receptacle. Results of experiments and calculation show that the void and the spacing factor decrease with increased particle size. In the case of graphite the void reaches a maximum at a particle size of about 0.1 microns. The apparent density increases with increased particle size. The variations in agglomeration characteristics may result from differences in the shape of the particles, separation of the particles by a film of adsorbed air, variation in the friction forces on the surface of the particles, thermodynamics, and/or interaction of attraction and repulsion forces, probably originating in electric surface charges and normal valence forces. The last of these causes may be the decisive factor.

12507 APTIC NO. 30042

Shandorov, G. S.

CALCULATION OF A JET AXIS IN A DRIFTING FLOW. *(Raschet osi strui v snosyashchem potoke). Izv. Vyssh. Ucheb. Zaved. Aviat. Tekh., 9(2):100-104, 1966. 3 refs. Translated from Russian. Holman (John F.) and Co., Inc. 6p., Dec. 1966.*

NTIS: NASA TT F-10,638

Gas jet forms can be theoretrically determined. Various forces deflect the jet including pressure. The pressure distribution around the jet, the variation in the maximum dimensionless rarefaction at the initial cross section, and the axes of the jets can be determined.

12508 APTIC NO. 30063

Smith, Wm. Hayden

INTERNAL CONVERSION IN BENZENE, BENZENE-D6, AND SULFUR DIOXIDE. *J. Chem. Phys., 54(10):4169-4173, May 15, 1971. 22 refs.*

Benzene and sulfur dioxide have as a common feature the appearance of a phosphorescent emission, differing in that the phosphorescent state can be reached by benzene from the 1B2u state without external perturbation whereas collisions are required by SO2 for the intersystem crossing 1B1 to yields 3B1 to occur. Lifetime studies of benzene and benzene-d6 at pressures below 1 micron Hg, using an electron beam phase shift method, yield a lifetime of 73.5 plus or minus 8.0 nsec for the measured levels of the 1B2u state of benzene and lifetimes varying from 89 plus or minus 9 to 113 plus or minus 11 nsec for essentially the same levels in benzene-d6. From the measured absorption oscillator strength, the nonradiative processes depopulating the 1B2u state must proceed at a rate of 1.2 plus or minus 0.14 times 10 to the 7th power inverse sec. These results are compared with previous theory and experimental data. Radiative lifetime measurements for sulfur dioxide have been extended from those given previously and have been reanalyzed with a model assuming spectral overlap of two different sulfur dioxide upper states. This analysis is shown to be consistent with certain previous discussions of the emission spectrum and, in particular, with those of Douglas concerning the anomalous lengthening of the 1B1-state radiative lifetime. (Author abstract modified)

12509 APTIC NO. 29095

Soloukihin, R. I.

IGNITION KINTICS IN HIGH-TEMPERATURE OXIDATION WITH NITROUS OXIDE IN SHOCK WAVES. *Dokl. Phys. Chem. Sect. (English translation from Russian of: Doklady Akad. Nauk SSSR), 194(1):678-681, Sept. 1970. 12 refs.*

Results are presented of systematic measurements of ignition arrests behind the front of transient shock waves over a wide range of temperatures, for three different gas mixtures, using nitrous oxide as oxidant. The gas mixtures were carbon monoxide-nitrogen dioxide-argon; ammonia-nitrogen dioxide-argon; and methane-nitrogen dioxide-argon. Typical experimental data are represented by interferograms and oscillograms of pressure, velocity, and gas luminescence for shock wave in the CO-N20-Ar mixture. For each mixture, the concentration of atomic oxygen reached a maximum after a time which was considerably less than the full induction period. Also the values of activation energy obtained for all three gas systems differed only slightly, which permits ignition in each system to be described by a common chain oxidation reaction scheme.

12510 APTIC NO. 30037

Spence, D. and G. J. Schulz

VIBRATIONAL EXCITATION AND COMPOUND STATES IN NO. *Phys. Rev., 3(6):1968-1976, June 1971. 30 refs.*

The cross section for elastic scattering by electron impact on nitric oxide shows resonances in the energy range 0-2 eV. These resonances, with a spacing of about 0.16 eV, are associated with vibrational levels of NO-, and there is a near-coincidence in energy between the 4th vibrational state of NO and the 6th vibrational state of NO-. The width of these resonances increases monotonically from 0.02 to 0.10 eV as the vibrational quantum number of NO goes from 1 to 6. The energy dependence of the vibrational cross sections exhibits peaks at the positions of these resonances, and the magnitude of these peaks is measured. The vibrational states of NO can decay by the emission of an electron into various vibrational levels of NO. The branching ratio for a few of these decays is measured. A potential energy diagram of NO is drawn, using the experimental evidence. (Author abstract)

12511 APTIC NO. 27268

Strakhov, B. V., V. P. Lebedev, and N. I. Kobozev

EXPLOSIVE OXIDATION OF NITROUS OXIDE MIXED WITH OZONE. *Russ. J. Phys. Chem. (English translation from Russian of: Zh. Fiz. Khim.), 44(7):934-937, 1970. 11 refs.*

The first synthesis of nitric oxide by the explosion of mixtures of ozone and nitrous oxide was achieved. At an initial pressure of 200 mm mercury, the maximum yield of 14.9% of nitric oxide is reached with 40% of ozone in the mixture. The maximum is followed by an almost linear fall in the yield, that with 90% ozone the nitric oxide concentration in the mixture fall to 2.1%. Over the range of concentrations of ozone from 0-40%, the formation of nitric oxide and that of nitrogen are almost equally probable; at ozone concentrations exceeding 40%, the yield of nitrogen, like that of nitric oxide, diminishes almost linearly. Partial replacement of nitrous oxide in the initial mixture by nitrogen lowers the yield. The experimental results are explained in terms of the accepted mechanism for the thermal decomposition of nitrous oxide, according to which nitric oxide is formed by the reaction N20 plus O yields 2NO. The equilibria N20 plus 1/2 O2 forms and is formed from 2NO, and 2NO forms and is formed from N2 plus O2, established in the non-isothermal system, must be taken into account to explain the features of the final yield of nitric oxide. (Author abstract modified)

12512 APTIC NO. 29463

Suzuki, Shin, Nobutoshi Horiuchi, and Wararu Ando

STUDIES ON PHOTOCHEMICAL REACTION BETWEEN SULFURIC ACID GAS AND ORGANIC COMPOUNDS (2). *(Aryusan gasu to yuki kagobutsu tono kokagaku hanno ni kansuru kenkyu 2). Text in Japanese. Preprint, Japan Chemical Society, Tokyo, 1p., 1971. (Presented at the Japan Chemical Society, Annual Meeting, 24th, Tokyo, March, 1971, Paper 3337.)*

The pressure change in the reaction of sulfuric acid gas with cis-2-butane, the photochemical reaction of sulfuric acid gas with trans-2-butane, and the structural analysis of the liquid generated in these reactions were studied. A vacuum of 0.001 mm was produced in the reaction vessel with an oil revolution pump, and sulfuric acid gas and butane were added. The reaction vessel was maintained at water temperature, and illuminated with a 450 W high-pressure mercury light. The substance generated after the reaction was analyzed by gas chromatography, and dissolved in tetrahydrofurran and for thin-layer chromatography. The substance was then separated and measured by infrared spectroscopy. After tracing the photochemical reaction of sulfuric acid gas and cis-2-butane with the pressure change method, it was observed that as the reaction progressed, the pressure decreased. It is speculated that sulfuric acid gas and cis-2-butane generated some additional compounds in the presence of light. The photochemical reaction of sulfuric acid gas and trans-2-butane brought about similar results, showing a reaction of isomerization in the presence of light and also generating a liquid substance. This substance yielded a sulfuric oxygen compound and vinyl base measurable by infrared absorption spectroscopy.

12513 APTIC NO. 29527

Suzuki, S, N. Horiuchi, and Y. Takase

STUDIES ON PHOTOLYSIS OF NITORGEN OXIDE. *Text in Japanese. Taiki Osen Kenkyu (J. Japan Soc. Air Pollution), 5(1):70, 1970. (Proceedings of the Japan Society of Air Pollution Annual Meeting, 11th, Japan, 1970.)*

Experiments on the photolysis of nitrogen oxide were conducted in a quartz-glass reactor with a 6 watt mercury lamp. Nitrogen oxide and nitrogen dioxide concentrations were determined by the Saltzman method. The longer illumination increased NO concentration, decreasing NO2 concentration. In an evacuated (001 .01 mm Hg) reactor, NO2 was illuminated with a mercury lamp and the pressure change was measured with a silicon oil manometer. For correction, a reactor was painted black and tested with an air filled reactor. By illumination, the pressure was increased. By the intermittent illumination NO2 and its reverse NO and O was observed. Nitrogen dioxide, NO, nd oxygen were condensed with dry-ice or liquid nitrogen and their pressure.

12514 APTIC NO. 29967

Suzuki, Shin, Noritoshi Horiuchi, and Wataru Ando

PHOTOCHEMICAL REACTION BETWEEN SO2 AND ORGANIC COMPOUNDS (II). *(Aryusan-gas to yukikagobutsu tono kokagaku han no). Text in Japanese. Taiki Osen Kenkyu (J. Japan Soc. Air Pollution), 5(2):82, 1970. (Presented at the Japan Society of Air Pollution, Annual Meeting, 11th, Japan, 1970.)*

In a evacuated quartz reactor, sulfur dioxide and butene were illuminated with a mercury lamp. The reaction mixture was analyzed with gas chromatography for the gases and thin layer chromatography (TLC) for the liquid. Obtained gases were cis-butene-2 and the isomer, trans-butene-2. Formation of the latter depends on the concentration of original gases and reaction time. TLC gave 6 to 8 unidentified components.

12515 APTIC NO. 29596

Tabata, Norikazu and Mitsugu Mori

ELECTROSTATIC FILTER USING DIELECTRIC FILTER MATERIAL. *(Yuden rozai shiki seiden firuta). Text in Japanese. (Mitsubishi Electri Co., Ltd. (Japan)), Japan. Pat. Sho 46-599. 4p., Jan. 8, 1971. (Appl. June 15, 1966, claims not given).*

A new static filter was designed which assures performance practically free of the leak current, thus ensuring higher efficiency for dust collection. With the new filter, the permeable electrode plate attached to one side of the dielectric filter material is eliminated and replaced with a set of discharge wires installed some distance away from, and along-side of, the dielectri filter material while another permeable electrode plate is attached to the other side of the dielectric filter material. As DC voltage is applied between the discharge wire and the permeable electrode plate, electric discharge takes place from the discharge wire to the electrode plate. Because the dielectric filter material is located between the two, the discharge comes to a halt when the filter material accumulates an ion charge to some degree. When the filter material is charged with ions, a high-intensity electric field is formed between one surface (the side facing the discharge wires) of the filter material and the other surface (the side with the electrode plate) while the electric field between the filter material and the discharge wires becomes comparatively weaker. This results in a higher efficiency of dust collection. And since the discharge wires are located some distance away from the filter material, there is no problem of leak current experienced with a conventional type. Meanwhile, the electric charge of the filter material decreases with leakage, whereupon the electric field between the filter material and the discharge wires becomes comparatively stronger, thus resuming the discharge from the discharge wires to the electrode plate on the other side of the filter material.

12516 APTIC NO. 29884

Takahashi, Saku

THE STUDY OF THE REACTION OF HYDROGEN SULPHIDE WITH ATOMIC OXYGEN USING EMISSION SPECTRUM. *Mem. Def. Acad. Japan, 10(3):369-387, Dec. 1970. 18 refs.*

The chemiluminescent reaction between hydrogen sulfide and atomic oxygen was studied in a flow system at room temperature and a pressure of 4-6 torr. A photomultiplier tube placed at a selected observation level was used with appropriate filters to monitor the H_2S-O emission in the range 3000-7000 A. Measurements of the reaction velocity carried out between O and H_2S were accomplished by taking pictures of the variations of emission intensities with time through a selected observation level, when the charge was shut off. The initial reaction is H_2S plus O to yield HS plus OH, followed by the chain reactions HS plus O yields SO plus H and H plus H_2S yields H_2 plus HS. From the ratio of H_2S consumed to the O atoms consumed, it can be estimated that the chain length is about 5, and the rate constant for the initiating reactions becomes 3.52 times 10 to the minus 14th power cc/molecule sec. The formation of sulfur dioxide with SO and O is the third order combination reaction in the mixture of SO, O, and M. The reaction SO plus O plus M yields SO_2 plus M plus hv is the dominant process which removes SO, and its rate constant is 1.6 times 10 to the minus 31st power sq cc/sq molecule sec. (Author summary modified)

12517 APTIC NO. 29649

Takahashi, T.

A FEW OBSERVATION ON THE GENERATION MECHANISM OF OBNOXIOUS ODOR. *(Akushu busshitsu hassei kijo no 2, 3 no kosatsu). Text in Japanese. Akushu no Kenkyu (Odor Research J. Japan), 1(4):33-38, March 1971. 9 refs.*

Much energy has been spent on how to cope with odor problems, but only after they happen. Therefore, odor generation was studied. The automatic oxidation chain reaction of unsaturated fats starts when the R-H loses hydrogen, causing a free radical. The process of automatic oxidation can be known by measuring the amount of oxygen absorbed or the absorption speed (POV). In the initial induction period, there is little oxygen absorbed and no generation of POV. Then the reaction starts, and the amount of oxygen absorbed and POV rapidly increase. The ROOH which is generated is comparatively stable, but is separated by metals, light, and temperature, causing the free radical. Automatic oxidation is promoted, and various secondary products are made. When fats are heated to a high temperature, carboxyls, carbonyls, acrolein, and carbonic acid gas are generated, as in garbage combustion. The Meyrard (?) reaction is the most well-known amino acid reaction and generates melanoidin. When alpha-dicarbonyl compounds cause Strecker decomposition, an obnoxious odor is given off. Alpha-amino acids are easily oxidized, and generate odors at a certain concentration, for example, the decomposition of alanine into acetaldehyde and ammonia, or of methionine into acrolein and mercaptan. Purefaction is a kind of fermentation which happens in the presence of microbes. Protein is th easiest to putrefy. Ptomaine, sometimes called the animal or putrefaction alkaloyd, is a mixture of nitrogen compounds of the amine group. The putrefaction of protein produces hydrogen sulfide, mercaptan, indole, catole, ammonia, and amine. Thus, the substances generated by the automatic oxidation of fats and heated decomposition, are no different from those generated by the general oxidation in a chemical reaction. Although they are unstable, they can be supplied as standard samples. Most of the odorous substances change the quality of odor radically and more than two kinds of substances may cancel each other or have multiple effects. Control should be made after quantitative analyses have been made and after seeking the relationship between the human sense of smell and the values arrived at by instrumental analysis. Authoritative panel members would judge the smells.

12518 APTIC NO. 29729

Takashima, Yoichi and Hiroyuki Tsuchiya

ON ADHESION OF SMOKE MIST PARTICULATES FLOWING THROUGH BETWEEN PLAN PARALLEL PLATES. *(Heiko heibankan o nagareru enmutai ryushi no fuchaku ni tsuite). Text in Japanese. Preprint, Japan Society of Chemical Engineering, Tokyo, 2p., 1971. 3 refs. (Presented at the Japan Society of Chemical Engineering, Autumn Conference, 4th, Hiroshima, Japan, Oct. 6-8, 1970, Paper F116.)*

Smoke mist with particulates of about 5 micron was directed into a plane parallel plate-type channel to measure the quantity of adhesion in a turbulent flow. As a result, the adhesion decreased in the range where the reduced stopping distance was less than 5. The test time was 5-10 minutes. The number of smoke mist particulates that adhered to the channel was counted by means of an optical microscope and then averaged. The adhesion was tested with and without an adhesive applied to the channel. The test results showed that the trend is practically identical with that indicated by the Friedlander formula irrespective of whether an adhesive is applied, provided that the reduced stopping distance is 5 or lower. With higher stopping distance than 5, the quantity of particulates decreased to the quantity when no adhesive was used. Even when an adhesive was applied, the increase was very gradual. The cause may be rebounding of the particulates on the wall surface of the channel or the rescattering of them. The amount of rebounding depends on the interaction between the elasticity of the adhesive applied to the wall surface and the smoke mist particulates while the ratio of scattering is determined by the interaction between the adhesive force of the wall surface and the shearing force of the fluid. Therefore, both can be distinguished from each other.

12519 APTIC NO. 29632

Taylor, G. W. and D. W. Setser

CHEMICAL APPLICATIONS OF METASTABLE ARGON ATMOS. *GENERATION, IDENTIFICATION AND CHARACTERIZATION OF CO (A3PI). Chem. Phys. Letters (Amsterdam), 8(1):51-54, Jan. 1, 1971. 19 refs.*

The excited states of carbon monoxide are often suggested to be important energy carriers in the oxidation of organic fuels and in particular for the reaction of oxygen atoms with unsaturated hydrocarbon molecules. CO is isoelectric with nitrogen and, although the first excited states have different electronic configurations, both are triplet metastable states having almost the same energies. A clean source of nitrogen molecules has recently been developed and the energy transfer reactions of N2 are currently under study. The present work has the following objectives: to find clean sources the first excited state of CO from argon impact reactions with a variety of CO precursors; to present a possible diagnostic method for the identification of the first excited state of CO, thus laying the groundwork for the clarification of its role in more complex systems.

12520 APTIC NO. 295550

Walkenhorst, W.

COAGULATION OF DUST PARTICLES, IN PARTICULAR BY AEROSOLS OF SEA WATER SALT. *(Sur la coagulation des poussieres en particulier par les aerosols de sel marin). Text in French. Lab. Central des Services Chimiques de L Etat, Paris (France and Inst. National de Securite pour la Prevention des Accidents du Travail et des Maladies Professionnelles, Paris (France), Colloq. Securite Sociale Serv. Prevent., 3rd, Paris, France, 1955, p. 44-52. 5 refs. (Nov. 3-5.)*

In experiments to determine the influence of finely dispersed sodium chloride on the sedimentation of carbon powder, the dust concentration expressed in numbers of particles per cu m of air was established by the use of a thermal precipitator and scrubber. The experiments were conducted with and without sedimentation tubes of 20 to 40 cm length attached to the precipitators Sedimentation was greatly accelerated by the NaCl aerosol at a high relative humidity, such as 93 to 95%. AT 32 to 42% humidity practically no acceleration occurred. The faster sedimentation rate at high humidity is due to dust coagulation of with the salt droplets, which increases the dust particle size and weight. Particle counts were made at intervals of 30, 60, and 120 minutes of sedimentation time, based on dust alone, and dust mixed with one, two, and five % salt dust. In one particle test condition without an aerosol, the initial carbon dust content of 1800 particles per cu cm went down to 1000 particles after two hours of sedimentation. The same test, but with two % NaCl aerosol brought the starting figure of 1500 particles down to 200 particles per cu cm after two hours of sedimentation.

12521 APTIC NO. 27460

Weiss, M. J., S. R. Mielczarek, and C. E. Kuyatt

INELASTIC ELECTRON SCATTERING FROM NITROUS OXIDE BETWEEN 5.0 AND 20.0 EV ENERGY LOSS. *J. Chem. Phys., 54(3):1412-1414, 1971. 18 refs.*

The electron scattering spectrum for nitrous oxide between 5.0 and 20.0 eV is shown. The spectrum, which was obtained with 115-eV electrons having a resolution (FWHM) of 0.036 eV, indicates strong window resonances at 17.78 eV and 19.04 eV. These are the first two members of the previously observed emission series IX. Oscillator strengths were determined for the scattering spectrum by normalizing the results of the present investigation to the absorption measurements of Cook et al in the continuum at 13.41 eV (924 A). The good agreement between results indicates that the Rydberg levels are evidently broadened by coupling to the ionization continua in this region.

12522 APTIC NO. 29612

Wen, C. Y. and S. C. Wang

THERMAL AND DIFFUSIONAL EFFECTS IN NONCATALYTIC SOLID GAS REACTIONS. *Ind. Eng. Chem., 62(8):30-51, Aug. 1970. 51 refs.*

In spite of extensive work carried out by investigators on heteorogeneous combustion and pyrolysis of solids and liquids, there has been a lack of coordination from the phenomenological approach resulting in, for the most part, fragmentary and sometimes obscure theories of noncatalytic reaction systems. Although the unreacted-core-shrinking model has been very useful in gas-solid reactions, its application should be exercised with care because of its inherent thermal and geometrical instabilities. The latter is frequently encountered when the solid is nearly completely converted and the solid product layer formed starts to impede the loss of heat. Mass and heat balances of a single particle undergoing solid-gas reactions are considered. In the unreacted-core-shrinking model, the effectiveness factor corresponds to the dimensionless rate per unit surface of reaction interface, and it is a very useful reaction. The effect of the surrounding gas temperature on the effectiveness factor is considered, as well as the effect of heat transfer around and within the particle, gas-film diffusion, and the effect of heat of reaction and the activation energy. Rate controlling mechanisms are indicated. In some cases, the diameter of the particle decreases as the reaction progresses without formation of an ash layer, as in the burning of pure carbon in air, and in the fluorination of uranium compounds. A nonisothermal unreacted-core model is derived to demonstrate the differences between the pseudo-steady-stage and unsteady-state solutions of the heat balance equation. a pseudo-steady-state analysis is also presented for simultaneous reactions.

12523 APTIC NO. 30071

Yoshioka, Naoya, Yoshio Kaneoka, and Fumikazu Igasaki

ADHESION TO PIPE S WALL WITH AEROSOL PARTICLES FLOWING IN A PIPE AS TURBULENT FLOW. *(Enkan nai o ranryu de nagareru earozoru ryushi no kanbeki eno fuchaku). Text in Japanese. Preprint, Japan Society of Chemical Engineering, Tokyo, 2p., 1970. 5 refs. (Presented at the Japan Society of Chemical Engineering, Autumn Conference, 4th, Hiroshima, Japan, Oct. 6-8, 1970, Paper F117.)*

Aerosol particles in a turbulent flow, in a vertical pipe, adhere to the pipe s wallbecause of the effect of turbulent flow. In a horizontal pipe, the effect of the gravitation cannot be neglected within a relatively small range of Reynold s number. An investigation of the effect and limit of gravitation showed that adhesion depends on shearing velocity, the density and the diameter of particles, and the angle. In deriving an equation of adhesion velocity, molecular diffusion can be neglected; it is sufficient to consider adhesion within material income and outgo in the radius direction. The diffusion coefficient of turbulent flow for a gas molecule is used as the diffusion coefficient of particles. Terms of gravitation can be more negligible in comparison with the diffusion term of turbulent flow as distance between a particle and the pipe wall lengthens. Experiments involving both horizontal and vertical pipes were conducted with zinc and tungsten particles. Adhesion was assumed to velocity depend on Reynold s number and angle, and adhesion velocity at the side wall of a horizontal pipe was assumed to nearly equal that in a vertical pipe. In the case of tungsten, the experimental results were in approximate agreement with theoretical values. Agreement was not quantitative, however, over a small range of shearing velocity. In the horizontal pipe, gravitation played some role in adhesion in turbulent flow. The adhesion velocity was determined by shearing velocity, diameter of particle, and angle. Adhesion velocities at side walls of horizontal and vertical pipes were equal.

EFFECTS-HUMAN HEALTH

12524 APTIC NO. 29683

Fukuoka Prefectural Government (Japan)

THE RESEARCH FOR THE EFFECTS OF AIR POLLUTION ON THE HUMAN BODY. (II) THE RELATIONSHIP BETWEEN ASTHMA-LIKE DISEASES OF THE SCHOOL CHILDREN AND AIR POLLUTION IN KITAKYUSHU. *(Taikiosen no seitai ni oyobosu chosa kenkyu. (II) Kitakyushu-shi ni okeru gakudo no zensoku shikkan to taikiosen tono kankei). Text in Japanese. p. 293-337, March 1968.*

The effects of air pollution on school children in Kitakyushu were investigated in November and December, 1967 using questionnaires about childrens respiratory symptoms based on the B.M.R.C. questionnaire. The rate of complaints about asthma-like symptoms, the prevalent rate of asthma-like diseases, and the clinical findings were obtained. Also, the practicability and reliability of the questionnaire were estimated. The questionnaires included asthma-like symptoms, the length of time lived in the district, and also economic and social elements. The 588 children of the Shiroyama elementary school at Yahata-ku (a highly-polluted distric with a yearly average dust fall for nine years of 65.6 t/sq km/day and a sulfur trioxide concentration of 1.043 mg/day/100 sq cm) and the 980 children of the Kirigaoka elementary school at Kokura-ku (a non-polluted district with a dust fall of 11.47 t/sq km/day, and a SO3 concentration of 0.534 mg/day/100 sq cm) were chosen as subjects for the investigation. The pulmonary function test and the allergen intracutaneous reaction test were carried out on the children who complained of asthma-like symptoms in the questionnaires. The rates of complaints about asthma-like symptoms were 12.93% among children at the polluted district and 6.46% at the non-polluted district, and the corrected prevalence was 10.20% among children of the pollution district and 5.53% among children of the non-polluted district. The children of the polluted district showed a rate about twice as high as that of the non-polluted district in both investigations. Thus, the questionnaire was effective for finding childrens asthma-like diseases. The results of clinical examination revealed that typica and slight symptoms or atypical ones were frequent in asthma-like diseases of the polluted district and that the tendency of eosino-penia to increase was not as frequent. Also, the positive rate of the allergen intracutaneous reaction test was low in atypical asthma. These results showed that air pollution was closely related to the rate of complaint about asthma-like symptoms and the prevealence rate of asthma-like disease in children.

12525 APTIC NO. 29807

American Industrial Hygiene Assoc., Detroit Mich.,
Biochemical Assay Committee

BIOLOGICAL MONITORING GUIDES. FLUORIDES. *Am. Ind. Hyg. Assoc. J., 32(4):274-279, April 1971. 26 refs.*

The nature of industrial exposures to fluorides is indicated and the metabolic fate of fluoride absorbed by the worker is briefly reviewed. Industrial exposure to these compounds may be assessed by measurement of the urinary excretion of fluoride, and urinary levels encountered in personnel in several fluoride-using industries are reported. Such data can be of use in arriving at approximations of the magnitude of exposure of a work force, and to indicate whether or not deleterious effects may be produced. The long term hazard to be protected against in the course of industrial exposure to fluorides is the development of crippling fluorosis. If early osteosclerosis as evidenced by increased density to x-rays can be avoided, crippling fluorosis will not be seen. Urinary fluoride concentrations not exceeding 5 mg/liter in before-shift, spot samples taken after two days off work are not associated with osteosclerosis, and such changes are unlikely at urinary levels of 5 to 8 mg/liter. (Author summary modified)

12526 APTIC NO. 29963

PROCEEDINGS OF THE 9TH CONFERENCE OF JAPAN ASSOCIATION OF INDUSTRIAL HEALTH. *(Dai 9 kai Nippon sangyoi kyogikai kiji). Text in Japanese. Sangyo Igaku (J. Ind. Health), 13(2):138-159, March 1971.*

Brief summaries are given of conference reports on medical examinations of workers handling heavy metals, especially lead; case histories of lead poisoning in paint factories; health control at beryllium factories; and a case of an oxygen-deficient environment. Also summarized are reports on the effect of auto exhaust on patrols, results of medical check-ups on taxi drivers and toll collectors, and the hygienics of airborne lead particles.

12527 APTIC NO. 30000

ADDITION OF LEAD TO FUEL - HARMFUL OR DANGEROUS? (Bleizusaetze im Kraftstoff - harmlos oder gefaehrlich)? Text in German. VDI (Ver. Deut. Ingr.) Nachr. (Berlin), 25(9):6, 1971.

In over 40 years of intense scientific research no proof has been found that lead additives in a gasoline cause damage to human health. Lead concentrations in urban atmospheres average less than 2 microgram/cu m in residential areas and 2 to 4 microgram/cu m in business districts. However, medical opinion rejects judgements by commercial firms which regard these values as low in comparison to maximum allowable work area concentrations of 200 micrograms/cu m because the lead measured in city streets is mainly found in fine dust below 5 microns diameter and the occupational standards are not geared to fine dust. The amount of lead ingested with food is greater than that inhaled; however, the considerably lower lead intake through inhalation is accompanied by a significantly higher retention in the lung. Even if only a small fraction of the lead is deposited in the bones, such lead accumulation may become important through long years of exposure.

12528 APTIC NO. 29981

Alibaev, T. S.

ON THE STUDY OF ALLERGIC REACTIONS IN CONNECTION WITH AIR POLLUTION IN SETTLEMENTS WITH INDUSTRIAL DISCHARGES. *(Ob izuchenii allergicheskikh reaktsiy v svyazi s zagryaznyeniem vozdukha naselennykh mest promyshlennymi vybrosami). Text in Russian. Gigiena i Sanit., 36(3):85-88, 1971. 24 refs.*

The necessity of investigating the connection between allergic diseases and environmental factors is stressed. The literature is quoted referring to connection between some forms of allergic diseases and atmospheric pollution in the vicinity of industrial plants. Some pollutants can cause diseases, the prerequisite of which is increased sensitivity of the organism. Allergic properties of various harmful substances and the level of their toxic and sensitizing effect are different. A common characteristic of atmospheric pollution is that it causes changes of a non-specific nature in the organism, which effects functions of an organism, for example its immunologic reactivity. Along with specific allergy, non-specific allergy (para-allergy) is widely spread. The systematic research on the connection between non-specific changes in the organism and allergy and on the allergy characteristics has not yet been done. It has to include laboratory research and research under natural conditions. Some problems connected with investigation of allergic reactions of populations caused by atmospheric pollution are indicated.

12529 APTIC NO. 29571

Ardelan, I., M. Cucu, and E. Andronache

STUDIES OF THE SIGNIFICANCE OF DUSTS AND GASES FOR THE PATHOLOGY OF INFECTIONS OF THE RESPIRATORY TRACT. *(Untersuchungen ueber die Bedeutung von Staeuben und Gasen fuer die Infektionspathologie des Atemtraktes). Text in German. Wiss. Z. Humboldt Univ. Berlin Math. Naturw. Reihe, 19(5):455-456, 1970.*

Experiments were made to study the effect of dust and irritating gases on infections of the respiratory tract induced by experimentally introduced pneumococci and influenza viruses in white male mice. Silica dust, carbon dust, and calcium carbonate dust respectively were introduced into the nostrils together with the infectious agent. Only the infectious agents were applied to a control group. The dust caused extended duration of disease and an increased mortality rate. Of the three types of dust applied, silica had the most damaging effect. In another set of tests, mice were exposed for 7 hrs a day to 16 mg/cu m sulfur dioxide and 4 mg/cu m chlorine. After 21 days the same infectious agents were applied. Control animals were not exposed to the irritating gases. This influence of the gases was less pronounced in pneumococcal infections than in viral infections, where they produced an intensified occurrence of protracted pneumonia, and increased mortality. The effect of chlorine in this respect was stronger than that of SO2.

12530 APTIC NO. 29503

Astrup, Poul, Hannes G. Pauli, Knud Kjeldsen, and Carsten Esmarck Petersen

INTRODUCTION AND GENERAL DESCRIPTION OF THE STUDY AND OF THE PROCEDURES FOR PROLONGED EXPOSURE TO CARBON MONOXIDE AND HYPOXIA. *Scand. J. Clin. Lab. Invest. Suppl. 103, vol. 22:5-8, 1968. 4 refs.*

Carboxyhemoglobin in the blood enhances the development of arteriosclerosis. To test the pathogenetic mechanisms involved, eight students were exposed to carbon monoxide in Cophenhagen (sea level) and to hypoxia in Jungfraujoch (3454 m above sea level). The students were divided into two groups and age, height, and weight were recorded. Then measurements were taken of basal metabolism, cardiac output, work load test, renal clearances, plasma and blood volume, capillary filtration rate, pulse rate, blood pressure, diuresis, acid-base status of the blood, oxygen dissociation curves, homoglobin concentrations, hematocrits, reticulocyte counts, and serum and urine analysis. Five tenths per cent carbon monoxide doses were given each student for eight days at each location. Because some of the results were interesting and unexpected, some of the measurements were repeated in short term exposure studies. No results are given.

12531 APTIC NO. 29878

Ayres, Stephen M.

PATIENT ADVICE DURING ACUTE AIR POLLUTION EPISODE. *Arch. Environ. Health, 22(5):591-596, May 1971. (Presented at the American Medical Assoc. Annual Convention, 118th, New York, N. Y., July 16, 1969.)*

The irritant potential of the atmosphere is increased during thermal inversions and decreased wind speed. Under these conditions, particulates and gaseous pollutants can exceed average levels by threefold to tenfold. Epidemiologic studies show significant increases in respiratory disease morbidity and mortality. The physician must, if possible, protect his patient and prevent exacerbation of the patient's disease. This can be done by encouraging the use of air purifiers in conjunction with air conditioners and humidifiers, by instructing patients with obstructive lung disease to begin using antibiotics when pollution increases, and by encouraging increased use of nebulized bronchodilators. Use of intermittent positive-pressure breathing therapy and pulmonary physio-therapeutic techniques, including frequent coughing, deep breathing, and drainage positions, should also be encouraged.

12532 APTIC NO. 29588

Barnea, M., M. Zielinski, and M. Cucu.

EXPERIMENTAL STUDIES ON THE EFFECT OF SMALL DOSES OF LEAD AND SULFUR DIOXIDE. *(Experimentelle Untersuchungen ueber die Wirkung geringer Mengen von Blei und Schwefeldioxid). Text in German. Wiss. Z. Humboldt Univ. Berlin Math. Naturw. Reihe, 19(5):461-462, 1970.*

To evaluate the combined toxic effect of lead and sulfur dioxide, white Wistar rats were exposed to various concentrations and conditions of these pollutants in two test chambers. To simulate the condition of the air in residential areas, the SO2 was used in gaseous form, generated from a vessel containing the liquefied gas and equipped with a pressure reducer and control system for the air flow to the test chambers. The lead was used in the form of minute particles contained in vapors, obtained from a metal container located in a hermetically sealed electric furnace equipped with temperature control. The vapor was drawn from the furnace by means of a nitrogen current. A system of control devices ensured a constant lead concentration in the two test chambers. One chamber obtained a controlled concentration of 0.4 mg/cu m SO2 and four micrograms per cu m Pb, the other chamber exactly half of these concentrations. The animals were exposed to the gases for six hours per day over a six-month period. A control group of rats was exposed to normal atmosphere. The test rats showed a smaller gain in weight than the controls. Oxygen consumption was greater with the test animals, indicating stimulation of the general catabolism due to the SO2 and Pb concentrations in the air. Other effects included reduced functioning of the central nervous system as proved by testing of reflexes to light and electrical impulses, reduced activity of liver enzymes, and reduced resistance of the test animals to experimental infection with pneumococci.

12533 APTIC NO. 29609

Bender, W., M. Goethert, G. Malorny, and P. Sebbesse

EFFECTS OF LOW CARBON MONOXIDE CONCENTRATIONS IN MAN. *(Wirkungsbild niedriger Kohlenoxid-Konzentrationen beim Menschen). Text in German. Arch. Toxikol. (Berlin), 27(2): 142-158, 1971. 28 refs.*

The uptake and psychological effects of carbon monoxide on healthy volunteers during and after exposure were studied. The subjects sat in a closed chamber continuously circulated with a mixture of air and CO. After 8 hours of breathing 100 ppm CO, a concentration of 93 ppm was measured in expiratory alveolar air, showing that diffusion equilibrium had not yet been reached. The highest concentration of carboxyhemoglobin measured under these conditions was 11.6 percent. It was calculated, by applying the law of mass action, that only within a limited range of CO concentrations is there an approximate linear relationship between the CO concentration in expired air and the COHb content of blood. Any conclusions as to the COHb content of blood drawn from the known CO concentration of expired air, assuming a linear correlation between the two over a great range of concentrations, will be in error, since the relationship is really an exponential one. It was shown that exposure to 100 ppm CO for 2 1/2 hours caused a significant decrease in visual perception, manual dexterity, and ability to learn and perform certain intellectual tasks. The measured CO concentration is alveolar air was 55 ppm and the COHb level was 7.2 percent. (Author abstract modified)

12534 APTIC NO. 29587

Benzko, W.

ON HYGIENIC AND TOXICOLOGICAL PROBLEMS OF POLLUTION BY ARSENIC. *(Zur hygienisch-toxikologischen Problematik der Luftverunreinigung durch Arsen). Text in German. Wiss. Z. Humboldt Univ. Berlin Math. Naturw. Reihe, 19(5):499-500, 1970.*

Studies were made in the areas of a power station in Czechoslovakia which burns coal from nearby mines containing 1000 to 1500 g of arsenic per ton of dry coal. The arsenic is present in the form of sulfide, realgar, and orpiment. A series of tests of the air composition in a nearby village showed a maximum arsenic concentration of 69 micrograms per cu m, and an average of 19 micrograms per cu m. The soil and open waters also showed some degree of pollution by arsenic. The dying of bees several kilometers away in the prevailing wind direction was observed. Toxication of domestic animals occurred after a retaining wall of an ash bunker had broken, causing tense contamination of meadows and pastures. Arsenic was found in substantial above-average quantities in the hair of children living near the power station. Rabbits examined during a one-year period in locations about one km from the power station revealed maximum surface accumulations in the skin, claws, and fur. Internally the highest concentrations always occurred in the kidneys. Laboratory experiments under controlled conditions with mice without fur included toxication by arsenic added to drinking water in a concentration of 50 mg per liter during a test period of 256 days. The accumulations of arsenic in the skin and liver reached their peak between the 16th and the 32nd day, then fell off gradually to a significantly low level at the end of the test period.

12535 APTIC NO. 29565

Bonnemaison, M.

TWO OBSERVATIONS IN A FLUORSPAR QUARRY. *(Deux observations dans une carriere d extractions de spath-fluor). Text in French. Lab. Central des Services Chimiques de L Etat, Paris (France) and Inst. National de Securite pour la Prevention des Accidents du Travail et des Maladies Professionnelles, Paris (France), Colloq. Securite Sociale Serv. Prevent., 3rd, Paris, France, 1955, p. 115-116. (Nov. 3-5.)*

Two cases of silicosis were found in a routine medical examination of a crew of ten quarry workers. Some fluorspar lodes in the quarry were found embedded in other rock formations (some of which included quartz and other forms of silica) which had to be broken loose by the workers either manually or with power equipment for loading on carriages together with the fluorspar. The materials were then transported to the wash installations, where the fluorspar was washed out and sorted. Samples of dust sediment were collected at the mouth of a drilled hole in the rock. By using a polarizing microscope, a content of 1% quartz of 10-20 micron particle size was found, and, by chemical analysis, 1.9% of free crystalline silica. The quartz particle sizes were confirmed in tests of dust samples obtained with an A.R.M. apparatus.

12536 APTIC NO. 29431

Breisacher, P., J. D. Hackney, E. E. Pedersen, and M. P. Verma

RAPID ASSESSMENT OF TESTS OF POLLUTANT EFFECTS IN MAN. *Inst. of Environmental Sciences, Mt. Prospect Ill., Proc. Inst. Environ. Sci. Annu. Tech. Meet., 17th, Los Angeles, Calif., 1971, p. 278-281. 5 refs. (April 26-30.)*

It is impossible to pinpoint heart attacks, emphysema onset, asthma, and other chronic respiratory diseases as a sole result of air pollution. However, air pollution can aggravate these conditions. A series of tests is needed that can detect measurable responses in subjects exposed to realistic levels of atmospheric pollution. The effect of mixed pollutant inhalation on the ability to concentrate was studied with a group of smokers. The Attentive Diagnostic Method (ADM) was used to measure performance. Carbon monoxide in the tobacco smoke was the pollutant. The concentration of carboxyhemoglobin in the blood was measured before and after the test with a Beckman Infra-red analyzer. Also, a non-smoker group was given the ADM tests as a control group. Data was analyzed by age, sex, COhB content, and smoker or non-smoker group. The results showed higher levels of COHb in the smoker group before and after the ADM test. However, the difference between the two measurements for the smoker group showed no appreciable elevation of COHb. No significant differences were found for the two groups in the rapidity of search time. The accuracy of response (percent error) was not a sensitive index of influence on performance. Ability to recover after an error diminished for the smokers. The smokers also had greater irregularity of response.

APTIC NO. 29971

12537

Bushtueva, K. A.

ATMOSPHERIC POLLUTIONS AND HEALTH. *(Atmosfernyye zagryazneniya i zdorov e). Text in Russian. Gigiena i Sanit., 36(3):3-7, 1971. 12 refs.*

Changes in the structure of the morbidity and mortality rates of a population connected with the industrializations and urbanization process are considered, specifically the occurrence of some nonspecific diseases such as atherosclerosis, and heart diseases, lung cancer, and bronchitis. Specific studies, aimed at determining the correlation between structure of morbidity in a population and size of the populated area showed a large difference between morbidity indicators for cities and villages. The difference in standard indicators of morbidity and mortality rates from lung cancer between inhabitants of cities and villages revealed the existence of a so called city factor of the morbidity rate of the population, which was typical for lung diseases. The origin of the existence of a city factor seen mainly in the density of a population the social environment, and air pollution, both from the atmosphere and from smoking, are considered.

APTIC NO. 29640

12538

Buslin, E.

CARBON MONOXIDE AS TOXIC GAS. *Centre Doc. Siderurg. Circ. Inform. Tech., no. 5:1235-1248, 1969. 2 refs. Translated from French. British Iron and Steel Industry Translation Service, London (England), April 1970.*

The physical mechanism of respiration is considered with respect to its disturbance by the presence of carboxyhemoglobin in the blood. A formula is derived for calculating the coefficient of carbon monoxide intoxication i.e., the percentage of hemoglobin blocked in the carboxyhemoglobin state). This coefficient must be taken into consideration when determining the effects produced by various atmospheric CO concentrations in relation to duration of exposure. Symptoms of chronic and acute intoxication are described together with preventive measures and means of resuscitation. This information has special relevance for blast furnace operations since blast furnace gas contains 25% CO.

APTIC NO. 30136

12539

Carnow, Bertram W., Robert M. Senior, and Robert Karsh

THE ROLE OF AIR POLLUTION ON CHRONIC OBSTRUCTIVE PULMONARY DISEASE. *J. Am. Med. Assoc., 214(5):894-899, Nov. 2, 1970. 17 refs.*

There appears to be considerable epidemiological evidence that air pollutants are at least cofactors in the development of acute and chronic pulmonary disease and a precipitating cause of acute exacerbations in individuals with chronic pulmonary disease following short-term exposure. Some of this evidence was provided by the 1968 Chicago air pollution diary study which quantitated the effect of sulfur dioxide on patients with chronic bronchopulmonary disease. Much remains to be done to document the effects of other pollutants. In treating patients with pulmonary disease, the physician should determine whether the patients have exacerbations at times of high pollution levels. If they do, antibiotics, hydration, and bronchodilators should be the mainstays of therapy.

APTIC NO. 30135

12540

Clarke, G., A. R. Guyatt, J. H. Alpers, C. M. Fletcher, and I. D. Hill

CHANGES IN AIRWAYS CONDUCTANCE ON SMOKING A CIGARETTE. *Thorax, 25(4):418-422, July 1970. 10 refs.*

Measurements of airways conductance using a body plethysmograph were made on 25 men before and after smoking one cigarette on each of four days and before and after a control period without smoking on another day. The repeatability of these measurements and of the bronchostrictor effect of smoking was studied. The variance was as great as that observed in a previous field study in industry despite close supervision and a stable environment before the measurements. This variation appears due to random fluctuation rather than to the lack of close supervision inevitable in a field survey. A second study was made on 16 of the men in which the bronchoconstrictor effect of plain and filtered cigarettes was compared. Filters which removed either the particulate or the vapor phase of the smoke had a similar effect in reducing the bronchoconstrictor response of cigarette smoking. (Author abstract)

APTIC NO. 30127

12541

Cohen, Seymour I., Margaret Deane, and John R. Goldsmith

CARBON MONOXIDE AND SURVIVAL FROM MYOCARDIAL INFARCTION. *Arch. Environ. Health, 19(4):510-517, Oct. 1969. 18 refs. (Presented at the American Medical Association Air Pollution Medical Research Conference, 9th, Denver, Colo., July 22, 1968.)*

Fatality rates among 3080 patients with myocardial infarction admitted to 34 Los Angeles hospitals during 1958 were studied to test the hypothesis that persons with acute cardiovascular disease are adversely affected by high ambient carbon monoxide concentrations. The hospitals were divided, on the basis of CO isopleths, into those located in low-pollution and high-pollution areas. The results indicate that there is an increased MI case fatality rate in hospitals in high-pollution areas and that this difference is only evident during periods of relatively increased CO pollution.

APTIC NO. 29559

12542

Deleplanque, M.

CHART FOR EVALUATION OF THE RISK OF SILICOSIS. *(Abaque pour l evaluation du risque de silicose). Text in French. Lab. Central des Services Chimiques de l Etat, Paris (France) and Inst. National de Securite pour la Prevention des Accidents du Travail et des Maladies Professionnelles, Paris (France), Colloq. Securite Sociale Serv. Prevent., 3rd, Paris, France, 1955, p. 85-86. (Nov. 3-5.)*

A chart for evaluating the risk of silicosis in accord with generally accepted criteria is based on two fixed values that only particles of three microns or less are taken into consideration, and that the time period of continuous exposure of the worker to the risk is eight hours. The chart is in the form of a co-ordinate system where the number of particles per liter of air is entered on the abscissa, and the percentage of free silica on the ordinate. A curve of the shape of a hyperbola divides the field into two zones, one of danger and the other of no-danger. To determine whether a certain condition is considered dangerous, one plots the actual number of particles on the abscissa, and the actual percentage of free silica on the ordinate. The location of the intersection of these two co-ordinates determines whether or not the location has noxious dust conditions.

12543 APTIC NO. 29993

Dixon, J. R., D. B. Lowe, D. E. Richards, L. J. Cralley, and H. E. Stokinger

THE ROLE OF TRACE METALS IN CHEMICAL CARCINOGENESIS: ASBESTOS CANCERS. *Cancer Res., 30(4):1068-1074, April 1970. 11 refs.*

Research with the microsomal fraction of rat lung homogenates showed that 10 metals in trace amounts were capable of both augmenting and inhibiting benzpyrene hydroxylase activity. These effects were found to be dependent on the concentration of the metals. All metals did not show the same activity pattern. Copper, magnesium, iron, zinc, nickel, and cobalt, ions with a valence of plus 2 stimulated the BP hydroxylase enzyme significantly at low concentrations, as well as inhibiting the enzyme at higher concentrations. However, no effect on the BP hydroxylase enzyme was demonstrable with arsenic, selenium and chromium with valences of plus 3, plus 4, and plus 3 respectively. Beryllium (plus 2), iron (plus 3), and chromium (plus 6) significantly inhibited the enzyme. When the trace metals were extracted from chrysotile asbestos and added to enzyme reaction mixtures, the enzyme activity was inhibited by approximately 73%. This inhibition of BP hydroxylase by the trace metals contained in chrysotile suggests that chrysotile has the potential of interfering with the detoxification of benzypyrene and thereby could contribute to carcinogenesis. Further support is given this hypothesis by the independent finding of Selikoff that lung cancer occurs three times more frequently in asbestos workers who smoke; the decrease in lung BP hydroxylase, as well as copper, magnesium, and zinc with age; and the finding that patients with lung cancer had minimal activity levels of BP hydroxylase. (Author summary modified)

12544 APTIC NO. 29899

Dolgner, R., L. Pelech, H. W. Schlipkoeter, and P. Schmidt

THE STUDY OF THE POLLUTED AIR INFLUENCE ON CHILDREN S HEALTH IN RUHRDISTRICT. *(Studium vlivu znecisteni ovzdusi na zdravotni stav deti v poruri). Text in Czech. Cesk. Hyg. (Prague), 16(23): 62-70, 1971. 13 refs.*

Two groups of children were examined from Gelsenkirchen, an area with industrial pollution, and from Westerland/Sylt, a control region with a clean atmosphere. In both sexes of the exposed children, enlargement of cervical and submandibular lymph glands and tonsils, lower body height, lower values of hemoglobin, and depression of erythrocyte resistence was found. The girls especially showed lower erythrocyte count and belated bone maturation; and the boys showed lower HbE values. The results proved that the group diagnostic method can be used in other populations as well as in those for which it was originally intended. The results are internationally comparable.

12545 APTIC NO. 29835

Estler, C.-J., F. Heim, H. P. T. Ammon, and V. Zimmermann

CATECHOLAMINE-INDEPENDENT GLYCOGENOLYSIS IN BRAIN DURING CARBON MONOXIDE POISONING. *Pharmacol., vol. 5:55-63, 1971. 22 refs.*

In carbon monoxide poisoned mice, enhanced glycogenolysis and lactate production in the brain are not prevented by pretreatment of the animals with reserpine or an adrenergic beta-receptor blocking agent. Since glycogenolysis is not accompanied by changes in the phosphorylase-a content or phosphorylase-a/phosphorylase (total) ratio, it becomes unlikely that adrenergic mechanisms play a major role in the stimulation of carbohydrate breakdown during carbon monoxide poisoning. It appears more likely that by analogy to the condition in the heart, glycogenolysis is stimulated by an activation of phosphorylase-b due to changes in the concentration of metabolites which are known to inhibit (adenosine triphosphate, glucose-6-phosphate) or activate (adenosine monophosphate, inorganic phosphate) phosphorylase-b. (Author abstract)

12546 APTIC NO. 29716

Foote, Christopher S., Yew C. Chang, and Robert W. Denny

CHEMISTRY OF SINGLET OXYGEN. X. CAROTENOID QUENCHING PARALLELS BIOLOGICAL PROTECTION. *J. Am. Chem. Soc., 92(17):5216-5218, Aug. 26, 1970. 11 refs.*

Beta-carotene efficiently quenches singlet oxygen, and this quenching bears on the mechanism of the protective action of carotenoids against photodynamic damage in living organisms. When quenching rates are plotted against the number of conjugated double bonds, it is immediately obvious that the rates fall off sharply with decreasing chain length, the sharpest drop occurring between 7 and 9 conjugated double bonds. This behavior is remarkably similar to the protective action of natural carotenoids against chlorophyll photo-bleaching, which also falls off most sharply between 7 and 9 conjugated double bonds.

12547 APTIC NO. 29267

Friedrich, Hans

GENERATION AND MEASUREMNT OF AIR IONS FOR MEDICAL APPLICATIONS AND THER INFLUENCE ON REACTION TIME AND MONOSYNAPTIC REFLEX OF MAN. *(Erzeugung und Messung atmosphaerischer Kleinionen fuer medizinische Untersuchungen und ihr Einfluss auf Reaktionzeit und Muskeleigenreflex des Menschen). Text in German. Elektromed. (Berlin), 12(4):125-132, 1967.*

By determining the electric field in front of the face of a grounded subject, and by calculating the ion density as a function of the electric field, it is shown tha measurement of the effective (inhaled) ions is not possible by application of ion generation methods used at present in medical experiments. A new ion generator is proposed for determination of the effective ion density. It is shown that there is no qualitative difference in the ion effect between oral and nasal inhalation. The retention of air ions in the respiratory system was measured; no ions of a mobility greater than or equal to the limit mobility of the system (0.006 sq cm/Vs) were exhaled and it is highly probable that electric charges of even smaller mobility remain in the respiratory system. Experiments on the effects of air ions on reaction time and on the monosynaptic reflex of man are described. The first series of reaction-time experiments showed the same nonreproducibility of results that is noted in the literature. Both negative and positive ions prolonged as well as shortened reaction time. The different initial autonomic tonus (i.a.t.) of each subject is often assumed as a possible reason for this nonreproduciblity. Therefore in a number of experiments the attempt was made to obtain clearer results by influencing the i.a.t. with atropine. It was found that positive ions shortened the reaction time and negative ones prolonged it. The reaction-time change caused by the inhalation of ions ranged bewteen 5% and 15% and on the average was lower for subjects not influenced by atopine. During experiments on ion effects on the monosynaptic reflex, only negative ions were applied. The ion effect started on the average no sooner than 7 minutes after the beginning of the ionization and resulted in a diminution of the amplitude of the reflex-action potential of approximately 12%. (Author abstract modified)

12548 APTIC NO. 29925

Funabashi, Shigeru, Tatsuya Hayashi, Toshiya Nishimuta, Yukitake Furuya, Toru Takayama, Masaru Mizoguchi, Nobukiyo Sakurai, Keiji Kishimoto, Yoshiko Muramatsu, Yoshio Takayama, Ryotaro Tochigi, Sekka Ryu, Shu Terashima, Junichi Ito, Tsuyoshi Toba, Misako Murata, and Masatsugu Kubo

STUDIES ON AIR POLLUTION AND BRONCHIAL ASTHMA. REPORT 1. *(Taikiosen to kikanshizensoku ni tsuite. Dai 1 po). Text in Japanese. Nippon Shonika Gakukai Zasshi (Acta Paediat. Japan, Tokyo), 75(2):90-91, Feb. 1971. (Presented at the Japan Pediatric Society, Annual Meeting, 73rd, Tokyo, Japan, Nov. 22-23, 1970.)*

The relationship between air pollution, especially sulfur dioxide and bronchial asthma was investigated on the basis of health examinations of school children conducted since 1968 at Fuji City, Shizuoka Prefecture. The city was divided into sections of high, medium, and low pollution according to graphs of SO2 levels. The morbidity rate for bronchial asthma was 2.42% in sections of high pollution, 1.5% in sections of medium pollution, and 0.88% in sections of low pollution. A similar correlation was shown in detection rates of 5 diseases of the upper respiratory tract. In the sections of high pollution graphs of the monthly average of the frequencies of asthmatic attack and levels of SO2 were almost parallel. The rates of recovery of asthmatic children were low in the sections where there was high pollution, and were in general in inverse proportion to the levels of SO2.

12549 APTIC NO. 29558

Gaisne, M. A.

A CONTRIBUTION TO THE EVALUATION OF THE RISK OF SILICOSIS. *(Contribution a l evaluation du risque de silicose). Text in French. Lab. Central des Services Chimiques de l Etat, Paris (France) and Inst. National de Securite pour la Prevention des Accidents du Travail et des Maladies Professionnelles, Paris (France), Colloq. Securite Sociale Serv. Prevent., 3rd, Paris, France, 1955, p. 87-88. (Nov. 3-5.)*

As part of a systematic study of dustiness in working areas where silicosis-producing conditions exist, and in other working areas not affected by this risk data are reported from an installation for pounding sea pebbles located on the Atlantic coast of France. The powder contains over 90% silica. Statistics for the period 1949-1953 on the incidence of silicosis are shown based on particle size of three microns or less and on an exposure period of eight hours a day to these conditions. No case of silicosis occurred at 78,000 to 141,000 particles per liter, one case at 202,000 to 338,000, and several cases at 880,000 to 1,600,000 many of them leading to death. After measures to decrease the dustiness to an average of 150,000 particles per liter were taken, no further cases of silicosis were recorded. The risk of silicosis appears to increase rapidly above 300,000 particles, and reaches dangerous proportions at about one million particles per liter of air.

12550 APTIC NO. 29715

Gardner, Murray B., Clayton G. Loosli, Bernard Hanes, William Blackmore, and Dixie Teebken

HISTOPATHOLOGIC FINDINGS IN RATS EXPOSED TO AMBIENT AND FILTERED AIR. *Arch. Environ. Health, vol. 19:637-647, Nov. 1969. 27 refs.*

The biologic effects of prolonged exposure to ambient Los Angeles atmosphere upon several rodent species have been studied. No significant difference was observed in life span or weight at death of rats living in ambient vs. filtered Los Angeles air, nor was there any discernible histologic effect upon lung tissue following prolonged exposure to the ambient atmosphere. However, a more abrupt increase in the incidence of chronic nephritis occurred in male rats in the ambient air, commencing at about 650 days of age. Two thirds of the ambient air rats at the time of spontaneous death had some evidence of chronic nephritis, as compared to 50% of the rats exposed to filtered air. These findings raise the possibility that exogenous factors in the Los Angeles atmosphere may promote the development of this renal degenerative disease. (Author abstract modified)

12551 APTIC NO. 29763

Gardner, Murray B., Clayton G. Loosli, Bernard Hanes, William Blackmore, and Dixie Teebken

PULMONARY CHANGES IN 7000 MICE FOLLOWING PROLONGED EXPOSURE TO AMBIENT AND FILTERED LOS ANGELES AIR. *Arch. Environ. Health, vol. 20:310-317, March 1970. 27 refs.*

The incidence and appearance of lung tumors and pneumonitis are reported in over 7000 mice, following prolonged exposure to ambient as compared with filtered Los Angeles air. Three inbred strains of mice were used: lung tumor susceptible A strain and A/J strain, between 1963 and 1965, and lung tumor resistant C57 black strain, from 1965 to 1967. Mice in the ambient air colonies showed no difference in histological appearance and no increase in incidence of lung tumors; on the contrary, more lung adenomas in A/J mice were noted in the filtered air group. Acute bronchopneumonia and interstitial pneumonitis were qualitatively similar but quantitatively significantly more common in ambient air C57 black mice. The findings suggest that prolonged exposure to ambient Los Angeles air is associated in several strains of mice with an increased susceptibility to pulmonary infection but not to increase pulmonary neoplasia. Cleansed air was furnished by filtering the ambient air through an activated charcoal and fine pore filter for the removal of particles over 0.3 micron in diameter. Nitrogen dioxide, sulfur dioxide, ozone and other oxidants, and many unreacted hydrocarbons were effectively removed by these filters. On the other hand, carbon monoxide, nitric oxide, and short-chain hydrocarbons were practically unaffected by the filter units. (Author abstract modified)

12552 APTIC NO. 29221

Gracey, Douglas R., David W. Cugell, Ernest S. Bazley, Key Nam, Jerome J. Callaway, and William B. Buckingham

PULMONARY COMPLICATIONS OF ASBESTOS EXPOSURE. Chest, 59(1):77-81, Jan. 1971. 13 refs. (Discussion at the clinical conference in Pulmonary Disease, Chicago, Ill., 1970.)

Pulmonary function data are presented for a 44-yr old patient who developed a malignant pleural mesothelioma more than 25 yrs following brief employment in an asbestos processing plant. Also discussed are the relationships between asbestos exposure and neoplasm and the synergistic carcinogenic effect of asbestos exposure plus cigarette smoking. The subject in question had smoked one pack of cigarettes daily for 10 yrs. While there is no good correlation between the amount or duration of exposure and the development of neoplasms, there is no doubt that asbestos exposure increases the incidence of bronchogenic carcinoma, malignant pleural and peritoneal mesothelioma, and possibly other malignancies. The evidence that cigarette smoking plus asbestos exposure causes bronchogenic carcinoma is excellent. Cigarette smoking alone is unlikely to be a factor in the observed increased incidence of mesothelioma. The potential hazard to urban dwellers from the increasing industrial use of asbestos may be less than assumed. Moreover, city dwellers may be heavily exposed to many other air pollutants which, in combination with cigarette smoking, are carcinogenic. Pulmonary function abnormalities associated with asbestos exposure may include physiologic changes depending on the stage of the disease, complications, and associated pathologic lesions.

12553 APTIC NO. 29815

Horiuchi, Kazuya

SOME PLANS FOR FUTURE STUDIES FOR LOW LEVEL OF LEAD ON THE HUMAN BEING. *Preprint, United States - Japan Cooperative Science Program. (Presented at the Conference of Effects of Environmental Trace Metals on Human Health, Honolulu, Hawaii, Feb. 1-5, 1971.) p. 20-27, 1971. 19 refs.*

Since lead is normally present in small amounts in the human body, several studies were undertaken to establish the origin and amount present in blood, urine, feces, and organs of healthy persons. Based on the results, the maximum allowable concentration of lead oxide dust in working environments was established at 0.05 mg/cu m. Some experiments were performed on the amount of ambient lead in a large city in Japan. Studies now in progress pertain to oxygen consumption of reticulocytes and stippled cells, differences of absorption of lead compounds, and calculation of lead storage in the body. Plans for future studies include the velocity of electroconductivity of peripheral nerves of lead workers, resistance of peripheral red blood cells, reformation of discriminant function for the diagnosis of the lead body burden, and the effects of low levels of organic lead.

12554 APTIC NO. 29904

Iwasaki, Tatsuro, Kazuro Iwai, Hiroshi Hatsukano, Kenji Takai, Masakazu Aoki, Kiyobumi Tokuchi, Kenichi Nakamura, Toru Mori, Nobukatsu Ishikawa, Fumio Nakajima, Kaneharu Tsuruta, Itsuzo Shigematsu, Takeo Suzuki, Hiroshi Yanagawa, Nanako Matsuzaki, Tsuyoshi Kawaguchi, Daisuke Suzuki, Yu Hirayama, Masaharu Hitosugi, Tonoe Yasoshima, Namikichi Imai, Kazuo Abe, Atsushi Otani Hirotatsu Suganuma, Tokio Fujimaki, Tadako Shimo, and Masako Seki

STUDY ON THE EFFECTS OF AIR POLLUTION ON HUMAN BODY--WITH SPECIAL REFERENCE TO OBJECTIVE, COMPARATIVE STUDY OF ALL THE INHABITANTS BY CHEST X-RAY RINDINGS. *(Taikiosen no jintai ni oyobosu eikyo ni kansuru kenkyu--tokuni kyobu x-sen shoken ni yoru chiku jimin zenin no kyakkanteki hikaku kenkyu). Text in Japanese. 43p., March 1969.*

The incidence of pulmonary disease and the frequency of subjective symptoms (cough, expectoration, and chest-pain) was studied in all the inhabitants more than 30 years old in 13 polluted areas and 13 nonpolluted areas which were chosen from the areas surveyed for the actual conditions of tuberculosis by the Ministry of Health and Welfare in July, 1968. Then 1320 and 1293 subjects were studied in the polluted and the nonpolluted areas respectively. Chest X-ray films, taken for the preceding survey, were reused. In markedly polluted towns and their surrounding areas, the incidences of bronchiectasis, pulmonary fibrosis, and chronic bronchitis compared with the results in the other areas. The incidence of bronchiectasis, pulmonary fibrosis, and chronic bronchitis were all less than 1%, and there were no marked differences in the incidence between the polluted areas and the nonpolluted areas, or between large towns and other areas. Also, 28% and 12% of the male inhabitants had a history of tuberculosis in the polluted and the nonpolluted areas respectively; 25% and 12% of the females had had tuberculosis in polluted and nonpolluted areas respectively. These figures were more than twice as large in the polluted areas as in the nonpolluted areas. A significant difference was demonstrated in the incidence of expectoration between the polluted and nonpolluted areas. The incidence of abnormal findings in chest X-ray films were compared, and the results showed that the incidence of nodular or linear net-like shadows in males of all ages was higher in the polluted areas, but the incidence in females was the same. The incidence of pneumatosis was slightly higher in polluted areas in both sexes, although this difference as not striking.

12555 APTIC NO. 28850

Johnston, J. E. (ed.)

PROGRESS REPORT. JANUARY-DECEMBER 1969. *Atomic Energy Research Establishment, Harwell (England), Health Physics and Medical Div., 42p., 1970. 90 refs.*

NTIS: AERE-PR-HPM-14

Studies have been carried out on the origin and behavior of aerosols in reactor coolant gases, the trasnport and deposition of aerosols released into the environment in normal and in postulated accident conditions, the uptake by inhalation and the metabolism of gases and aerosols in the human body, and the development of gases and aerosols in the human body, and the development of radiochemical and whole-body counting methods for detecting and localizing inhaled or ingested radioactivity. Since 1967, the program has been diversified to include projects on conventional atmospheric pollution and on industrial toxicology. Knowledge of the metabolism of trace compounds and of the metabolic differences between people are essential elements in the derivation of permissible levels. The percutaneous absorption of tritium, the ingestion of tritium, organic tritium in urine, and the oxidation of tritium have been studied. Air pollution studies are mentioned, including various sampling methods, visibility measurements, and analytical methods. Studies have included the life cycle of sulfur dioxide, interactions of SO2 with aerosol particles, the photooxidation of sulfur dioxide, and the absorption of sulfur dioxide. Occupational hygiene studies have involved chlorinated hydrocarbons and asbestos, while other studies have pertained to radiation physics, neutron dosimetry and radiobiophysics, a personnel dosimetry service, radiation spectrometry and computer processing, fallout, cellular radiobiology, medical services, biological applications of radiation processing, and soil radioecology.

12556 APTIC NO. 29791

Kajiwara, Saburo, Katsumi Yoshida, Hidehiko Oshima, Masayuki Imai, Masayoshi Kitahata, Ryo Yoshida, Masatsugu Kubo, Shigeru Funabashi, Motoaki Adachi, Taira Kawano, Kanzo Kagaya, Ryuichiro Suzuki, Tadahiko Shimizu, Yoshizo Tsunetoshi, Hisao Takahashi, Akio Ichinosawa, Miyoko Ueda, Noriko Nakayama, and Yasuyo Yamagata

EFFECTS OF SOOT AND SMOKE ON THE HEALTH OF SCHOOL CHILDREN. *(Bien to gakudo no kenko ni oyobosu eikyo ni tsuite). Text in Japanese. 42p., March 1970.*

The effect of soot and smoke on the pulmonary function of school children according to their growth was investigated in Osaka, Chiba, and Mie prefectures, in polluted and nonpolluted areas, between 1965 and 1969. The results were analyzed by computer. The vital capacity of 20,493 school was determined by measurement of forced vital capacity (FVC), timed vital capacity (TVC), and the effect of height. The mean value of FVC in the school children of nonpolluted areas was: male, Y equals A(2.552H 14.659A) and female, U equals A(2.552H 15.359A) where A is age and H is height. The correlation coefficient between the calculated value and the real value was + 0.92. The values of vital capacity, one second volume, 0.75 second volume, and 0.5 second volume, which were modified to consider the effect of school year and height, were compared with the degree of pollution (the maximal and the mean values) in the five years. These values fluctuated according to the degree of pollution in the three prefectures. Thus, the respiratory function of the school children was affected by air pollution. An evaluation by season was made for the pulmonary function test in the nonpolluted area of Osaka (this degree of pollution almost corresponds to that in the polluted areas of Mie or Chiba prefectures). The effect of air pollution on pulmonary function varies considerably with the seasons.

12557 APTIC NO. 29573

Kassasow, P., M. Argirowa, and L. Balabajewa

STUDIES ON THE INFLUENCE OF AIR POLLUTION ON THE HEALTH OF THE PEOPLE AT BELOSLAV, DISTRICT OF VARNA, PEOPLE S REPUBLIC OF BULGARIA. *(Untersuchungen ueber den Einfluss der Luftverunreinigun auf die Gesundheit der Bevoelkerung in Beloslaw, Kreis Varna, V. R. Bulgarien). Text in German. Wiss. Z. Humboldt Univ. Berlin Math. Naturw. Reihe, 19(5):485-487, 1970.*

The city of Beloslav lies in a valley, surrounded by sandy hills. The sand contains 93 to 94% free silica. During most days of the year the wind blows and carries sand dust into the air, with unfavorable effects on the health of the population. The average dust concentration is up to seven times the permissible daily average of 0.15 mg/cu m. Fluoroscopic tests were conducted to establish any dust-caused changes in the lung due to considerable accumulation of quartzitic sand in persons over 40 years of age. With children of age 10 to 14, the total content of silicon in the blood and urine, and the content of soluble silicon in the urine, were measured. A statistical analysis was made over five years to compare the incidence of diseases of the upper respiratory tract of the overall population of Beloslav with that of Dolgopol, which is relatively unpolluted. It was found that dust-caused affliction are prevalent in the age group 50 to 70. Parallel with unfavorable changes in the lung condition, an increased content of silicon in the blood was observed. The content of soluble silicon in the urine was higher in children than adults. Other symptoms observed were increased oxygen demand and increased decarboxylation of erythrocytes. The statistical comparison of Beloslav with Dylgopol showed twice the number of diseases of upper respiratory diseases in Beloslav, 2.5 times the incidence of bronchitis, and triple the incidence of bronchopneumonia and pneumonia.

12558 APTIC NO. 29529

Kjeldsen, Knud and Finn Damgaard

INFLUENCE OF PROLONGED CARBON MONOXIDE EXPOSURE AND ALTITUDE HYPOXIA ON SERUM LIPIDS IN MAN. *Scand. J. Clin. Lab. Invest. Suppl., 22(103):16-19, 1968. 18 refs.*

Serum lipid levels were investigated in eight young volunteers exposed to carbon monoxide and to an altitude of 3454 m for 8 and 10 days, respectively. Significant but small changes were seen only in total cholesterol values. During the CO exposure, no significant changes occurred the first four days of exposure, while a moderate increase (6 percent) was seen the last three days of study. In the high altitude part of the study, a moderate rise (609) percent) in serum cholesterol levels was seen during the firs two days. It is suggested that this effect of hypoxia is due to an inhibition of lipoprotein lipase. (Author abstract modified)

12559 APTIC NO. 29613

Kjeldsen, Knud and Finn Damgaard

INFLUENCE OF PROLONGED CARBON MONOXIDE EXPOSURE AND HIGH ALTITUDE ON THE COMPOSITION OF BLOOD AND URINE IN MAN. *Scand. J. Clin. Lab. Invest. Suppl., 22(103):20-25, 1968. 21 refs.*

The results of measurements of some components in blood and urine during exposure to carbon monoxide and high altitude are presented. The measurements concern electrolytes in serum and urine, certain enzymes in serum, and some hematologic parameters. The results show that reticulocyte counts increased 2-3 fold. Moderate increases were seen in urinary volume, on the average 400-800 ml/day. No changes in any of the serum electrolyte values occurred at high altitude or CO exposure. It was also found that high amounts of sodium, chloride, and calcium were excreted during the first day of hypoxia. Changes in potassium excretion, however, were not significant. Lactate dehydrogenase and glutamicpyruvic transaminase levels were unaltered during CO exposure and at high altitude. (Author abstract modified)

12560 APTIC NO. 29869

Klausen, K., B. Rasmussen, H. Gjellerod, H. Madsen, and E. Petersen

CIRCULATION, METABOLISM, AND VENTILATION DURING PROLONGED EXPOSURE TO CARBON MONOXIDE AND TO HIGH ALTITUDE. *Scand. J. Clin. Lab. Invest. Suppl. 103, vol. 22:26-38, 1968. 43 refs.*

The effects of prolonged exposure to carbon monoxide (anemic hypoxia) and to high altitude (hypoxic hypoxia) on metabolism, ventilation, and circulation were studied and compared with tests of control subjects who remained at normal sea level conditions. Almost no change in circulation, metabolism, or ventilation was seen during anemic hypoxia. Changes during hypoxic hypoxia confirm previous investigations by others: ventilation increased, while the ambient pressure saturated with water decreased. In the metabolism studies at high altitude, a slight increase of oxygen uptake and carbon dioxide output was observed. High altitude also caused changes in circulation, namely a continuous decrease in the partial pressure of CO2 in mean alveolar air and in the mixed venous blood. Calculations showed that the mean oxygen tension in the tissues during rest decreased during CO exposure by about 15-20%, while it was unchanged at high altitude. It is concluded that regulatory functions during prolonged exposure to hypoxia respond to a decrease of arterial oxygen tension. (Author abstract modified)

12561 APTIC NO. 29816

Kobayashi, Yoshitaka and Kenzaburo Tsuchiya

AIR POLLUTION BY TRACE METALS IN JAPAN. *Preprint, United States - Japan Cooperative Science Program, p. 28-48, 1971. 11 refs. (Presented at the Conference on Effects of Environmental Trace Metals on Human Health, Honolulu, Hawaii, Feb. 1-5, 1971.)*

Environmental pollution by lead in Japan, mainly in cities, is thought to be caused chiefly by automobiles. Preliminary studies of urinary lead revealed no difference between school children from contaminated and non-contaminated areas. The horizontal and vertical distribution of lead in air is being investigated, as well as hourly and seasonal variations. Levels of ambient cadmium and its influence on the body are being studied. Problems requiring further study include standardization of sampling methods and methods of analysis, determination of normal values of lead in the human body, and collection of data from investigations undertaken in both Japan and the United States.

12562 APTIC NO. 29882

Lawther, Patrick J.

SOME RECENT TOPICS IN AIR POLLUTION AND HEALTH IN LONDON. *Taiki Osen Kenkyu (J. Japan Soc. Air Pollution), 4(3):223-330, Oct. 1970. (Presented at the Japan Society of Air Pollution, Annual Meeting, 10th, Tokyo, 1969.)*

In reviewing air pollution and health in London, acute air pollution or smog and its effects are differentiated from chronic pollution and its effects. Measurement apparatus for sulfur dioxide and particulate matter is shown and described. Very small alterations in pollution by sulfur dioxide or by smoke are associated with increases in degree of illness of patients who have chest disease. If the lung is irritated, the airway can be narrowed either by bronchial constriction or by increasing the secretion of mucus. Air is then shunted to alveolae which may be under-perfused, and the blood leaves under-oxygenated. Studies of bronchitis and pneumonia reveal a marked increase in the prevalence of lower respiratory tract infections in the first year of life. However, these changes do not appear to be due to sulfur dioxide. When coal smoke was sprinkled on bacteria it was seen that wherever they fell there was an increase of growth of the colonies of Hemophilus influenzae. Factors relating to an increase in lung cancer mortality are indicated. A remarkable improvement in pollution in London in the past eight years is noted.

12563 APTIC NO. 29575

Maziarka, S. and E. Mros.

ON THE RELATIONSHIP BETWEEN AIR POLLUTION AND MORBIDITY AND MORTALITY OF THE POPULATION IN POLISH TOWNS. *(Ueber die Beziehungen zwischen Luftverunreinigung und Morbiditaet sowie Mortalitaet der Bevoelkerung in polnischen Staedten). Text in German. Wiss. Z. Humboldt Univ. Berlin Math. Naturw. Reihe, 19(5):483-484, 1970.*

Statistical data were compiled in three large cities in Poland to study any relationship between the concentration of air pollutants and the incidence of illness or death; meteorological factors were also compared. As a rule, highest concentrations were observed to occur on calm days, whereas winds tend to dissipate pollutants. The number of recorded patients during favorable conditions of weather and purity of air were compared with those who fell ill during more polluted conditions. During the latter period the number of persons in Katowice and Chozov who developed diseases of the respiratory tract went up by 40%, and for cardiovascular diseases, by 13%. In Krakow the increase was 90% for patients with respiratory complaints, and 17% for patients with cardiac. A distinct rise in number of deaths in Krakow was observed on days of increased sulfur dioxide. When SO2 exceede a daily average of 0.2 mg/cu m, and the dust content at the same time was above 0.3 mg/cu m, the number of deaths rose by 32% during one test period. When the SO2 concentration rose above 0.3 mg/cu m, the mortality rate levelled off and no further increase was observed.

12564 APTIC NO. 29493

Mills, A. L.

LEAD IN THE ENVIRONMENT. *Chem. Brit., 7(4):160-162, April 1971. 18 refs.*

Organic and inorganic lead have different modes of toxicological action and distribution in the tissues of the body, so it is important to distinguish between them in the environment. The amount of lead absorbed from a given air concentration varies according to the particle size. Of the lead from both air and dietary sources which is retained in the body, about 95% is found in bone. The most commonly used yardsticks of the total environmental exposure and the resulting body burden of lead are the concentrations in blood and urine. Sources of lead poisoning are indicated. Lead intoxication does not appear to occur at blood levels below 80 micrograms per 100 ml. The relationships between the blood concentration of lead and activity of the blood enzyme delta-aminolevulinic acid dehydratase and urinary coproporphyrin and delta-aminolevulinic acid require further study since such parameters appear to be directly related to the degree of exposure. Evidence on whether the lead concentration in air is going upwards or downwards is presented. Economic advantages of using lead have to be balanced against the degree of genuine hazard arising from possible environmental and health effects. The use of lead in gasoline is discussed in relation to automobile performance.

12565 APTIC NO. 29663

Mishima, Masao, Tadashi Hoshiai, and Takeo Suzuki

SEMI-AUTOMATIC DETERMINATION OF LEAD IN WIDE BLOOD. *(Oto anaraiza niyoru kecchu namari no bunseki). Text in Japanese. Taiki Osen Kenkyu (J. Japan Soc. Air Pollution), 5(1):64, 1970. (Presented at the Japan Society of Air Pollution, Annual Meeting, 11th, Japan, 1970.)*

Lead concentration in blood was tested using the automatic analyzer by Dithizon method to reduce individual errors. The blood samples were diluted with the buffer solution and dialyzed followed by addition of Dithizon-chloroform and determined by photometer. The results were checked by the atomic absorption photometric method.

12566 APTIC NO. 29958

Miura, H. and K. Taira

EFFECTS OF ATMOSPHERIC LEAD ON TRAFFIC POLICEMEN IN A MEDIUM SIZED CITY. *(Chutoshi ni okeru taikichu namari no eikyo). Text in Japanese. Nippon Eiseigaku Zasshi (Japan J. Hyg.), 26(1):134, April 1971. (Presented at Japanese Society for Hygiene, Annual Meeting, 41st, Tokyo, Japan, April 3-4, 1971.)*

The evaluate the effects of atmospheric lead on the human body, 50 policemen in Nagasaki Prefecture were selected according to their fields of activity. Porphyrin, its procursor, and lead were measured in the urine and blood. Atmospheric lead was trapped by a two-channel tape air sampler in a traffic congested area (I), a general area (II), and a residential area (III) within the city limits of Nagasaki. The air samples were analyzed with an atomic absorption photometer. Atmospheric lead decreased disproportionally with the traffic volume, the mean values for 24 hours being in area I, 2.03 microgram/cu m; II, 1.38 microgram/cu m; and III, 0.095 microgram/cu m. Coproporphyrin levels in urine were found in the following decreasing order; patrol car crew, outdoor workers, traffic controllers, police motorcyclists, and indoor workers. The difference between outdoor and indoor workers was large. Seven subjects had urine corproporphyrin content over 110 microgram/liter, seven had urine A.L.A. contents over 0.6 microgram/deciliter, and two had high levels in both coproporphyrin and amino levulenic acid. The results did not indicate a disturbance in the balance of lea metabolism in vivo or porphyrin excretion in vivo, in those exposed to concentration of atmospheric lead.

12567 APTIC NO. 29528

Mulhausen, Robert O., Poul Astrup, and Kresten Mellemgaard

OXYGEN AFFINITY AND ACID-BASE STATUS OF HUMAN BLOOD DURING EXPOSURE TO HYPOXIA AND CARBON MONOXIDE. *Scand. J. Clin. Lab. Invest. Suppl., 22(103):9-15, 1968. 32 refs.*

In eight subjects exposed to hypoxia at high altitude, the oxyhemoglobin dissociation curve was shifted to the right; the half saturation oxygen tension at pH 7.4 was changed from 26.7 to 30.2 mm Hg on the average. The decreased affinity of hemoglobin for oxygen appeared within 12 hours after exposure to hypoxia. The shift was confirmed in short exposure experiments using simulated high altitude in a low pressure chamber. At prolonged carbon monoxide exposure, the expected shift of the oxygen dissociation curve to the left occurred, but no adaptive changes were found. The physiological implication of these differences are discussed. It is suggested that the rapid shift to the right at high altitude may be a physiological adaptation. (Author abstract modified)

12568 APTIC NO. 30074

Muroya, Hideyuki, Tamenobu Kubota, Akio Suzuki,
Hiromasa Kita, Masatoshi Tanaka, and Shigeru Nagaoka

SOME HEALTH SURVEY RESULTS OF UNDERGROUND GARAGE WORKERS. *(Bo chika chushajo ni okeru kenkochosa). Text in Japanese. Nippon Eiseigaku Zasshi (Japan J. Hyg.), 26(1):144, April 1971. (Presented at the Japanese Society for Hygiene, Annual Meeting, 41st, Tokyo, Japan, April 3-4, 1971.)*

The effects of auto exhaust gases on the human body was studied by examining 100 workers (87 males, 13 females) in an underground parking area with respect to pulmonary ventilation and carboxyhemoglobin. Pulmonary ventilation functions were measured by an vitalor, and carboxyhemoglobin levels in nonsmokers were measured by a reduction method using a spectrophotometer. The average carbon monoxide level in the parking area was 25-30 ppm, or about twice as high as open air values. Twelve and two people showed a reduction (80% or less in each group) of the one second rate and of vital capacity, respectively. However, no relationship was recognized between these results and the subjects length of service or history of smoking. The nonsmokers carboxyhemoglobin levels were 4.0 plus or minus 0.5%, so especially high levels were not found among the workers in the parking area. When a questionnaire was completed detailing subjective symptoms, a significant relationship was found between eye irritation or chronic bronchitis symptoms and symptoms of upper respiratory tract irritation. However, those symptoms were effected by sulfur dioxide, dust, and other pollutants, rather than CO.

12569 APTIC NO. 29789

Murozumi, Masayo

LEAD MEN HEADING TOWARD DESTRUCTION--SPREADING OMINOUS METAL POLLUTIONS. *(Metsubo e muko namari ningen--Bukimi ni hirogaru kinzoku osen). Text in Japanese. Kagaku Asahi (Sci. Asahi), 30(12):39-44, Dec. 1970.*

Two articles on lead pollution were reviewed. If man is to eat 2 kg of food daily with an average intake of 0.2 ppm of lead, the micrograms 400 of lead are taken orally, of which 5% is absorbed into blood, and the remaining 380 micrograms are discharged. If 20 cu m air is necessary a day, and if lead concentration is 1.3 micrograms per 1 cu m, 26 micrograms enter the lungs of which 40% is absorbed into blood, totalling 30 micrograms. For smokers, there is another 10 micrograms premium. Although absorbed lead is partly discharged, the lead retained in human body gradually increases. In 1965, what was absorbed from food source was more than what was absorbed by lungs, but in 1970, the lead concentration in urban areas was 5 micrograms per 1 cu m. Accordingly, the lead contained in humans is nearly 100 times that of primitive man. Tetra alkyl lead is especially dangerous, since it damages the brain and nervous system. An analysis of snow accumulated in the North Pole, Antarctic, and Greenland showed that lead was contained in the snow of Greenland 200 years ago, indicating that lead smelting was conducted in the northern hemisphere. The tendency corresponds to the increase in lead production, and especially in the recent 30 years, the increase in the consumption of tetra-alkyl lead was tremendous. The snow in the Antarctic contains less lead concentration than the snow of Greenland 200 years ago. Thus, even up to the extreme Polar area, the northern hemisphere is contaminated by lead in the atmosphere. While lead concentration in blood is still 20 micrograms/100 g, one-third of the safety standard, the amount of tetra-alkyl lead added to gasoline must be limited and electric cars must replace the present models.

12570 APTIC NO. 29997

Naden, Rex A. and J. V. Leeds

SIGNAL PROCESSING TECHNIQUES FOR ESTIMATING PARAMETERS OF CERTAIN BIOLOGICAL MODELS. *Environ. Sci. Technol., 5(6):522-531, June 1971. 29 refs.*

An often encountered biological system is one whose input is a continuous function of time and whose output is a discrete stochastic process. The output is processed by a recording system which reports, with time period T, the number of events occurring in the prior time interval. Any model of the biological system should contain a model of the data processing section as well. Methods of reconstruction of the discrete data generated by such a system are discussed. These techniques are valuable in that more accurate modeling can often be accomplished by fitting to a continuous function rather than to discrete data points. The above stochastic system is often modeled by a deterministic system; the accuracy of this approximation is discussed quantitatively, in addition to predicting reconstruction error estimates. Combination of the reconstruction error estimates and the stochastic error estimates produces a relation between the maximum total relative error and the sampling period T. These results can be used to estimate total accuracy of the model if the sampling period is fixed, or to plan the best sampling scheme if the sampling time can be externally controlled. A fruitful application of this theory would be the analysis of a modern pollution episode for which daily data are available. Future stochastic models of biological phenomena such as health effects of air pollution are indicated. (Author abstract modified)

12571 APTIC NO. 29048

Niehaus, A., G. Reichel, and W. T. Ulmer

EFFECTS OF ATMOSPHERIC FACTORS AND OF SO2 AND AIRBORNE DUST EMISSIONS ON INTRABRONCHIAL FLOW RESISTANCE AND INTRATHORACAL GAS VOLUME OF SOUND AND SICK MEN. *(Die Wirkung von Witterungsfaktoren sowie der SO2- und Schwebestaubimmission auf den intrabronchialen Stroemungswiderstand und das intrathorakale Gasvolumen des gesunden und kranken Menschen). Text in German. Pneumonolog. (Berlin), 143(1):1-14, 1970. 43 refs.*

In the period between October 1965 and October 1966 intrabronchial flow resistance and intrathoracal gas volume were examined daily by means of body plethysmorgraphy in 17 subjects with sound lungs and in 18 patients with chronic obstructive respiratory diseases. Simultaneously, air humidity, barometric pressure, temperature, content of suspended particles, and sulfur dioxide concentrations in the atmosphere were measured. Neither in the patients with obstructive airway diseases nor in the healthy subjects, could a seasonal fluctuation of the intrabronchial flow resistance to be observed. The comparison of periods with strongly different degrees of air pollution or extreme conditions of temperature showed no influence of the SO2 and airborne dust emissions or temperature and humidity conditions on intrabronchial flow resistance. The interpretation of the experimental results must take into consideration that no extremely high emission concentrations were measured, as are common during periods of smog. (Author abstract modified)

12572 APTIC NO. 29753

Nizhegorodov, V. M. and Ya. L. Markhotsky

EFFECT OF LONG-TERM JOINT ACTION OF CARBON MONOXIDE, NITROGEN DIOXIDE AND AMMONIUM ON REQUIREMENTS OF ALBINO RATS IN VITAMIN B6. *(Vliyaniye dlitel nogo sovmestnogo vozdeystviya okisi ugleroda, dvuokisi azota i ammiaka na potrebnost belykh krys v vitamine B6). Text in Russian. Gigiena i Sanit., no. 1:109-111, 1971. 4 refs.*

The dosage of vitamin B6 required by rats under the effect of carbo monoxide, nitrogen dioxide, and ammonia to bring the vitamin level of the organism to a normal level was determined. The concentrations of the gases in the atmosphere were for CO, 21 mg/sq m; NO2, 2.1 mg/sq m; and ammonia, 16 mg/sq m. In B6 dosage determination, the total condition of the animals was considered and changes in daily excretion of B6 and 4-pyridinoxin acid with urea determined. The activity of blood aminoferase was measured. In the organism of animals receiving 50 micrograms of pyridoxin daily in addition to their regular feed the level of B6 in the tissues was the same as in the control group. This corresponds almost to a doubling in vitamin need compared with normal conditions, since the vitamin content in the daily supply of fodder was some 30 micrograms. The loss of B6 caused by the simultaneous action of all three gases is thus more pronounced than that from the individual action of any one of them.

12573 APTIC NO. 29473

O'Donnell, Robert D., Peter Mikulka, Patrick Heinig, and James Theodore

LOW LEVEL CARBON MONOXIDE EXPOSURE AND HUMAN PSYCHOMOTOR PERFORMANCE. *Toxicol. Appl. Pharmacol., 18(3):593-602, 1971. 20 refs. (Presented at the Fifth Annual Conference on Atmospheric Contamination in Confined spaces, Wright-Patterson AFB, Ohio, Sept. 16-18, 1969 and the Conference on the Biological Effects of Carbon monoxide, New York City, Jan. 12-14, 1970.)*

The effects of 5 concentrations of carbon monoxide exposure on time estimation, tracking, and ataxia were studied in 10 humans. The tracking task required the subjects to keep a needle display dial from going off scale by manipulating a control stick. Levels of CO used were 0, 50, 125, 200, and 250 ppm, yielding mean carboxyhemoglobin levels from 0.96 to 12.37% in a 3-hr exposure. No significant symptoms were reported by the subjects, and no ability to detect the presence of CO was noted. No overall trend toward poorer estimates of a 10-sec interval occurred as a function of CO uptake, and tracking performance did not deteriorate over the course of the exposures to CO. There was a suggestion that subjects inhaling CO showed a different overall pattern of tracking performance over time than control subjects. It is concluded that the present data do not support the hypothesis that low level carbon monoxide exposure of humans results in performance decrement. (Author abstract)

12574 APTIC NO. 29846

O'Donnell, Robert D.

RECENT RESEARCH INTO THE EFFECT OF LOW LEVEL CARBON MONOXIDE EXPOSURE ON PSYCHOMOTOR PERFORMANCE IN HEALTHY HUMANS. *Inst. of Environmental Sciences, Mt. Prospect, Ill. Proc. Inst. Environ. Sci Annu. Tech. Meet., 17th, Los Angeles, Calif., 1971, p. 266-269. 23 refs. (April 26-30.)*

Exposure of 10 healthy subjects to 50 and 125 ppm carbon monoxide for three hours and overnight exposure of four subjects to 75 and 150 ppm carbon monoxide failed to confirm earlier results indicating behavioral toxicity of low levels of CO acting alone. Specifically, no degradation in psychomotor performance was observed, nor, in the case of the second group, was there any major change in sleep patterns. Mean carboxyhemoglobin levels for the study ranged from 3-12%. Although the results cannot be applied unequivocally to community standards, they indicate that a normal individual can tolerate exposure to 50 ppm CO for eight hours, the present maximum allowable atmospheric concentration for industry, without disruption of psychomotor functions.

12575 APTIC NO. 29949

Papaevangelou, G.

AIR POLLUTION. *Text in Greek. Iatrike (Athens), 17(1):26-37, 1970. 55 refs.*

Air pollution as a public health problem is discussed. The main sources, types (including sulfur dioxide, sulfur trioxide, sulfuric acid, carbon dioxide, and carbon monoxide), and monitoring are presented; the experimental investigations and the epidemiological studies are discussed in detail concerning the immediate and delayed effects of air pollution on health. The effects on animals and plants, the economic and social aspects, and some air pollution episodes are also reviewed. The progress towards adopting criteria, guides, and standards of air quality and establishing air pollution control programs by site selection and zoning, process changes or equipment, fuel selection and utilization, and adequate legislation are discussed.

12576 APTIC NO. 29615

Pauli, Hannes G., Bruno Truniger, Jens K. Larsen, and Robert O. Mulhausen

RENAL FUNCTION DURING PROLONGED EXPOSURE TO HYPOXIA AND CARBON MONOXIDE. I. GLOMERULAR FILTRATION AND PLASMA FLOW. *Scand. J. Clin. Lab. Invest. Suppl., 22(103):55-60, 1968. 15 refs.*

Prolonged exposure of normal subjects to hypoxia and to carbon monoxide seem to affect renal functioning differently. During a 10-day stay at an altitude of 3454 m, a decrease in renal plasma flow was observed, while the glomerular filtrate rate remained close to control levels. A certain overall pattern of renal functional response to hypoxia in man is suggested. An acute increase of glomerular filtration was observed within the first 36 hours of prolonged exposure to CO. Renal function values from the second to the eighth day of CO exposure do not differ significantly from base line values. Possible explanations for these results are changes in intravenal vasomotor tone and/or in glomerular membrane permeability. (Author abstract modified)

12577 APTIC NO. 29805

Pauli, Hannes G., Bruno Truniger, Jens K. Larsen, and Robert O. Mulhausen

RENAL FUNCTION DURING PROLONGED EXPOSURE TO HYPOXIA AND CARBON MONOXIDE. II. ELECTROLYTE HANDLING. *Scand. J. Clin. Lab. Invest. Suppl. 103, vol. 22:61-67, 1968. 16 refs.*

Renal electrolyte handling was studied during prolonged hypoxia at high altitude and prolonged carbon monoxide exposure. At high altitude sodium and chloride elimination increased due to elevated tubular rejection, mainly during the first 24 hours. Potassium elimination appears to be affected in the converse manner. The renal glomerular filtration values remained relatively constant. During the first day of CO exposure sodium and chloride clearances were also elevated. Potassium clearance values show no apparent trend during CO exposure. (Author abstract modified)

12578 APTIC NO. 29804

Petersen, F. Bonde, J. Siggaard-Andersen, Jens Halkjaer Kristensen, and Knud Kjeldsen

CAPILLARY FILTRATION RATE ON THE HUMAN CALF DURING EXPOSURE TO CARBON MONOXIDE AND HYPOXIA (3454 M). *Scand. J. Clin. Lab. Invest. Suppl. 103, vol. 22:49-54, 1968. 9 refs.*

The capillary filtration rate (CFR) of the human calf was studied before and during prolonged exposure to hypoxia (high altitude, 3454 m) and before and during prolonged carbon monoxide exposure. The results, given in tabular form, show a fall in resting blood flow volume during CO exposure, while the mean value for CFR does not change. In the high altitude experiment there was a decrease in the mean value for resting blood flow/volume during the first days. No consistent changes occurred in the CFR values. Carbon monoxide exposure and high altitude gave no consistent alteration of the capillary filtration coefficient, while the variations in the individual results were quite large. Although the results indicate that CO exposure and high altitude do not change CFR in the human calf, it does not exclude CFR changes in other vascular areas and small unmeasurable changes that cannot be observed with the plethysmographic technique are not excluded (Author abstract modified)

12579 APTIC NO. 30137

Petty, Thomas L.

CAN ANYTHING BE DONE FOR EMPHYSEMA? J. Louisiana State Med. Soc., 122(7):216-218, July 1970. 18 refs.

Emphysema and chronic bronchitis, together called chronic airway obstruction (CAO), represent the nation's most rapidly growing health problem. Available data indicate that perhaps four to six million individuals have the disease, with possibly an equal number having hidden or early disease. Physicians involved in emphysema care should adopt a comprehensive care program involving patient education and indoctrination, bronchial hygiene, breathing retraining, physical reconditioning, and skillful application of pharmacological agents including oxygen. With regard to bronchial hygiene, patients must avoid smoking and air pollution. In addition, they should be taught the techniques of inhaling bronchodilating aerosols and steam, plus expulsive coughing. Daily exercises and walking are necessary to physical reconditioning. A new continuous ambulatory oxygen system at least transiently reverses pulmonary hypertension, corrects secondary polycythemia, and provides markedly improved excerise tolerance.

12580 APTIC NO. 29475

Robinson, Farrel R., Solomon F. Brokeshoulder, Anthony A. Thomas, and J. Cholak

MICROEMISSION SPECTROCHEMICAL ANALYSIS OF HUMAN LUNGS FOR BERYLLIUM. *Am. J. Clin. Pathol., 49(6):821-825, June 1968. 6 refs.*

NTIS, DDC: AD 698220

Microemission spectrographic techniques were used to analyze histologic sections of fixed embedded and frozen tissues from human cases of berylliosis. Beryllium was not demonstrated by microemission spectrochemical analysis in four cases in which the content averaged from less than 1.1 to 8.36 micrograms of Be per 100 Gm of tissue by conventional spectrography, but focal concentrations of Be were detected in other cases. Low levels of beryllium uniformly dispersed through the tissue will probably not be detected by microemission spectrography, whereas these low levels may be measured by conventional spectrography, if a sufficiently large sample of tissue is used. As a verification of the need to select specific sites for analysis, duplicate sections from frozen lung tissue of Case 11 were sampled randomly, and beryllium was not detected as often as when specific sites were analyzed. The microemission spectrographic technique is best used in conjunction with conventional spectrography.

12581 APTIC NO. 29673

Shigematsu, Itsuzo and Yutaka Hasegawa

ITAI-ITAI (OUCH-OUCH) DISEASE AND CADMIUM POLLUTION IN JAPAN. *United States - Japan Cooperative Science Program, Conf. Effects Environ. Trace Metals Human Health, Honolulu, Hawaii, 1971, p. 49-64. 1 ref. (Feb. 1-5.)*

Since 1953, three episodes of sickness and death have occurred in Japan: Minamata disease in Kumamoto and Niigata Prefectures caused by methylmercury; and the Itai-itai disease in Toyama Prefecture caused by cadmium. The Itai-itai disease symptoms include pain in the bones and the tendency to fracture easily. Roentgenological bone studies, urine and blood analysis, and autopsy and biopsy studies have been used to study the disease. Although no specific treatment is now available, Vitamin D causes rapid improvement. Mass health examinations and case history studies were used to investigate the geographical distribution of the disease. The clinically apparent disease was limited to women over 40 years of age who had experienced multiple deliveries (six times on the average) and who had inhabited the area for more than 30 years. Th Itai-itai disease was caused by chronic Cd poisoning; the cadmium originated from the mining and smelting of sulfide ores. Only the Jinzu River and the areas on its basin were polluted. The Ministry of Health and Welfare developed a plan to examine similar areas. Soot, smoke, and water pollution should be measured. Then the residents should be examined by urine tests, blood pressure, blood analysis, roentgenography, pulmonary function test, and X-ray. Control measures would then be set up including Cd standards in rice, water, soot, smoke, and drainage. Several research committee have been set up and area surveys were taken. But several importan questions still exist, such as: Why have only women over climacterium manifested the disease? Why has the Itai-itai disease only occurred in the Jinzu Basin when other areas have similar Cd levels? Will the toxic effect of Cd be modified by other trace elements?

12582 APTIC NO. 29614

Siggaard-Anderson, J., F. Bonde Petersen, Thorsten I. Hansen, and K. Mellemgaard

PLASMA VOLUME AND VASCULAR PERMEABILITY DURING HYPOXIA AND CARBON MONOXIDE EXPOSURE. *Scand J. Clin. Lab. Invest Suppl., 22(103):39-48, 1968. 14 refs.*

The effect of high altitude (3454 m) and of carbon monoxide on plasma volume was investigated during acute exposure (12 hours) and more prolonged exposure (8 days). The results are analyzed in terms of plasma volume by comparing 10 minute values at different times. The disappearance of radioidinated serum albumin I 131 was also studied during one hour at different times. Prolonged exposure to CO resulted in a decrease or no change in plasma volume; prolonged exposure to hypoxia showed a more marked increase in plasma volume. No changes were found in plasma volume during acute CO exposure, although the results probably were overestimated due to an increase in capillary permeability. Capillary permeability was unchanged during exposure to hypoxia. It is concluded that CO has a more pronounced effect on the permeability of the capillaries than hypoxia alone. The explanation may be that the tissue hypoxia was more severe in the CO experiments than during hypoxia at a simulated altitude. (Author abstract modified)

12583 APTIC NO. 29585

Skworzowa, D. N., W. P. Ossinzewa, N. N. Puschkina, and I. W. Wysotschina.

ON THE PROBLEM OF THE COMBINED EFFECTS OF SULFUR DIOXIDE AND BENZPYRENE ON THE ORGANISMS OF TEST ANIMALS. *(Zur Frage der kombinierten Einwirkung von Schwefeldioxid und Benzpyren auf den Organismus von Versuchstieren). Text in German. Wiss. Z. Humboldt Univ. Berlin Math. Naturw. Reihe, 19(5):457-459, 1970.*

Extensive experiments were made over a 2-yr period on 300 white rats to test the effect of sulfur dioxide alone, benzpyrene alone, and of both together as a cause of the growth of tumors. Among the effects observed was loss of weight, increased discharge of ketosteroids with the urine, and functional changes of liver and pancreas. Other effects included aerobic glycolysis in lung and liver, excretion of vitamins with the urine, and formation of tumors on the lung and other organs. Benzpyrene alone or in combination with sulfur dioxide had a stronger effect than sulfur dioxide alone.

12584 APTIC NO. 28919

Smith, Bradley E., Margaret L. Gaub, and Frank Moya

TERATOGENIC EFFECTS OF ANESTHETIC AGENTS: NITROUS OXIDE. *Anesthesia Analagesia Current Res. 44(6):726-732, Nov.-Dec. 1965. 16 refs. (Presented at the International Anesthesia Research Society Congress, 30th, Washington, D. C., March 28- April 1, 1965.)*

Pure-bred chick embryos were used to explore the teratogenic and lethal potential of nitrous oxide for six hours during gestation. Although, compared to a control group of embryos, there were slight changes in anomaly and fatality rates, these were not significantly different after 80% nitrous oxide. This was in marked contrast to previous findings with several fluorinated agents. However, the increase in fatality rate after 90% nitrous oxide anesthesia is a far more serious stress to the chick embryo than hypoxia alone. These findings indicate there is some mild toxic effect on the chick embryo of nitrous oxide anesthesia. (Author summary)

12585 APTIC NO. 29608

Stocks, P.

CANCER MORTALITY IN RELATION TO NATIONAL CONSUMPTION OF CIGARETTES, SOLID FUEL, TEA AND COFFEE. *Brit. J. Cancer (London), 24(2):215-225, June 1970. 11 refs.*

Comparison between the age-adjusted death rates in 1964-65 from cancers of different sites and the annual consumption of cigarettes, solid fuel, tea, and coffee as measured by trade statistics in 20 countries reveals the existence of significant correlations. Cigarette consumption per adult in the population is positively related with lung and bladder cancer in males and insignificantly with the lung in females. Negative relations are indicated with the liver and biliary passages, prostrate, and uturus. Solid fuel is positvely related with the intestine, lung and bladder in both sexes, with leukemia in males, and with breast cancer in females. Negative associations are indicated with the stomach. Tea is positively related with intestinal cancer, except for that of the rectum, in both sexes and with the larynx, lung, and breast in females. Negative associations are indicated with the stomach in both sexes and with that of the uterus and leukemia in females. Coffee is positvely related with cancer of the pancreas, prostate, and leukemia in males, and with that of the ovary and leukemia in females. Specially noteworthy were the contrasts between the intestine and stomach in their associations with solid fuel, cigarettes, and tea for which a possible explanation has been suggested. (Author summary)

12586 APTIC NO. 29589

Symon, Karel and Blahoslav Petr

THE INFLUENCE OF AIR POLLUTION ON PUBLIC HEALTH. *(Der Einfluss der Luftverunreinigung auf die Gesundheit der Bevoelkerung). Text in German. Wiss. Z. Humboldt Univ. Berlin Math. Naturw. Reihe, 19(5):471-473, 1970.*

Systematic and repeated examinations of groups of children from northern Bohemia who live in approximately equal climatic conditions and have comparable nutrition patterns, revealed that polluted air has an unfavorable influence on the growth and the development of children. Hemoglobin values drop while the globulin values in the blood plasma rise; enlarged tonsils were also observed. The findings are typical for air pollution of a general type, characterized by significant dust content and lack of ultraviolet radiation, but relatively low concentration of sulfur dioxide. In one area, polluted with arsenic, a greatly increased arsenic content was found in the hair and nails of the children. Lack of ultraviolet radiation appears to be specifically responsible for retardation in growth and development, for instance, in the maturing of the bone structure. An examination of young non-smoking women living in polluted areas revealed reduced vitality, faster rate of exhalation, pre-emphysematous condition, and in some cases coughing with expectoration of mucus. Toxic substances apparently either retard or stimulate normal metabolic processes; a substance in low concentration can stimulate an enzymatic system, but will inhibit it in higher concentrations.

12587 APTIC NO. 29916

Ueda, Miyoko, Noriko Nakayama, Tadahiko Shimizu, Yoshizo Tsunetoshi, Hisao Takahashi, and Akio Ichinosawa

STUDIES ON PROGNOSIS OF CHRONIC BRONCHITIS. *(Chiiki jumin niokeru mansei kikanshien no yogo). Text in Japanese. Taiki Osen Kenyu (J. Japan Soc. Air Pollution), 5(2):284-289, April 1971. 13 refs.*

Some relationship between air pollution and chronic bronchitis is recognized. However, as reports on the prognosis of chronic bronchitis are very poor, it is regarded as a mild illness which merely annoys people with cough and sputum. The effects of air pollution on human health, the actual prevalence of chronic bronchitis, and its prognosis are discussed. A study was conducted using 39,207 people over 40 years old from the general population. A Japanese version of the standard questionnaire of the British Medical Research Council Committee was used. Chest x-rays and respiratory function tests were also conducted. The death rate in the chronic bronchitis group was higher than that of the control group. This difference in death rate was very apparent in old age. The death rate from corpulmonale and emphysema in the chronic bronchitis group was approximately five times higher than that in the group having no cough or sputum.

12588 APTIC NO. 29825

Wada, Osamu

FOUR-ALKYL LEAD AND ENVIRONMENTAL POLLUTION. *(4-arukirunamari to kankyoosen). Text in Japanese. Naika, 27(5):892-897, May 1971. 38 refs.*

The history of tetraethyl lead as a gasoline additive was described including the history of its poisoning, properties, toxicity, factory environment, and toxic symptoms. The present problems of lead pollution in the general environment were also described. The effect of lead pollution on the human body could lessen human adaptation. The effect of lead on the human body can be determined by measurement of lead in blood and in urine; a better indication is the estimation of the activity of peripheral erythrocyte amino-levulinic acid dehydrase (ALA-dehydrase).

12589 APTIC NO. 29921

Yamaga, Shinro, Kaoru Omori, Haruko Saito, Takeshi Kobayashi, Etsuo Yoneyama, and Shogo Ochiai

EXPERIMENTAL STUDIES ON THE HEALTH EFFECTS OF AUTO EXHAUST GAS IN LOW CONCENTRATIONS. (REPORT 1) PRELIMINARY EXPERIMENT. *(Teinodo jidosha haiki gasu no eikyo ni kansuru jikkenteki kenkyu). Text in Japanese. Nippon Koshu Eisei Zasshi (Japan J. Public Health), 18(4):285-289, April 1971. 8 refs.*

Mice and rats placed in an airtight box and exposed for three hours a day six days a week (for a total of 110 days) to auto exhaust containing 20-30 ppm carbon monoxide showed no marked changes in body weight or blood pressure or increased mortality following secondary administration of toluene. Moreover, no pathological or histological changes were found in the animals. Blood analyses showed significant variations between the exposed animals and controls with respect to whole blood specific gravity on the 38th and 86th day after inhalation and with respect to hematocrit and hemochrome values on the 86th day. The variations disappeared following continued exposure of the experimental animals and are considered temporary. Results are also presented of a gas chromatographic analysis of the engine exhaust.

12590 APTIC NO. 29502

Yamagiwa, Hiroshi, Yasuo Sakakura, and Susumu Takeda

PATHOLOGICAL STUDY ON THE EXPERIMENTAL RABBITS AT AIR-POLLUTED AREA IN YOKKAICHI. *(Yokkaichi taikiosenchiiki ni okeru zensokushirei to jikkenteki kato no byorigakuteki kento. Zokuho). Text in Japanese. Saishin Igaku (Recent Med.), 26(5): 947-952, May 1971. 5 refs.*

Pathological investigations were carried out on the experimental rabbits kept at Isozu district from August, 1968 to May, 1970 and the hourly fluctuations of serum globulin by the electrophoresis of proteins (the cellulose and acetate method) were observed. Autopsy of the rabbits revealed the thickness of the mucosa of the windpipe and the bronchi, and the disappearance or atrophy of the cilia. Atelectasis, congestive hydropsy, interstitial inflammation, and emphysema were visible in the lungs and changes were observed at the periphery of the level between the bronchiole and the lung alveoli including blood vessel changes. Intrahepatic perichlolangitis and the secondary changes due to congestion were seen in the liver. Some adrenal glands were enlargde and the others were atrophied. Necrotic erosion of the superficial tissues, exudative gastritis, and degeneration of the specific layer were observed in the stomach. The right ventricles were enlarged in rabbits which had been kept long. Alpha and beta-globulins had no relation to the seasons or degree of pollution, but gamma-globulin increased during March to May and October to December. Pollution was highest during October to May in the Isozu district. Furthermore, amyloydosis occurred in three of 13 cases, and these three were assumed to be abnormal in general and immunological hemostasis. Yokkaichi-type asthma cases were easily classified into two groups of dissimilar diseases by autopsy: asthmatic bronchitis with a mild emphysematous condition and chronic bronchitis (chronic pulmonary emphysema) with a severe emphysematous condition. However, the intermediate disease was frequent, and duration from the onset of asthma to death was short. Also, morphologically highly advanced emphysema was more often seen in this disease than in general bronchial asthma.

EFFECTS-PLANTS AND LIVESTOCK

12591 APTIC NO. 29924

Chiba Agricultural Experiment Station (Japan)

COLLECTED PHOTOGRAPHS DEMONSTRATING PLANT DAMAGE BY AIR POLLUTION. *(Taiki osen ni yoru higaishokobutsu shashinshu). Text in Japanese. 28p., March 1968.*

Damage to pear trees on farms, and to plants in streets and gardens, caused by air pollution in Ichihara City, Chiba Prefecture, in 1965 and 1966 was investigated, as well as the accompanying meteorological conditions. Plant injuries were most severe during the budding stage in April and May and evergreen trees were abnormally defoliated in February. Damage to pear flowers, stalks, and leaves in orchards near industrial areas, and the falling and malformation of fruits were observed. A remarkable effect was seen on trees sprayed with a Bordeaux mixture. Reactions between the components of the Bordeaux mixture, and the atmospheric pollutants were assumed to occur. Decidious broadleaf trees, crop plants, and flowering plants were susceptible to sulfur dioxide but evergreen broadleaf trees were relatively resistant to the substance. Leaf damage was severe under the most adequate conditions of light, temperature, and humidity for plants. Judging from the analysis of meteorological factors in the city, the damage occurred on days when the weather cleared after a rain and with northeast or slight winds. The air stream may have been constricted by geographical conditions, permitting air pollutants adhering to the plants to be easily absorbed into the plant body, with the physiological function being activated by the good weather. Since sulfur oxides were identified as the pollutant by analysis of the air at six places in the city, the damage by sulfur dioxide and the physiological function of plants were also tested, by both indoor and outdoor laboratory apparatus.

12592 APTIC NO. 30060

Abeles, F. B., L. E. Craker, and G. R. Leather

ABSCISSION: THE PHYTOGERONTOLOGICAL EFFECTS OF ETHYLENE. *Plant Physiol., vol. 27:7-9, 1971. 14 refs.*

The role of ethylene in the aging of bean (Phaseolus vulgaris L. cv. Red Kidney) petiole abscission zone explants was examined. The data indicate that ethylene not only accelerates aging but also induces changes in break strength. Application of ethylene during the aging stage (stage 1) promoted abscission when followed by a second ethylene treatment during the cell separating stage (stage 2). The half-maximal effective concentration of ethylene to induce aging was around 0.3 microliter/liter; 10 microliter/liter was a saturating dose. Carbon dioxide reversal of ethylene action during stage 1 was incomplete and gave ambiguous results. Carbon dioxide (10%) reversed the effect of 10 microliter/liter ethylene but not 1 microliter/liter ethylene. The possiblility that ethylene not only accelerated aging but was required for aging was tested, and experimental evidence in favor of this idea was obtained. It is concluded that ethylene plays a dual role in the abscission of bean petiole explants: a phytogerontological effect and a cellulase-inducing effect. (Author abstract modified)

12593 APTIC NO. 30078

Attiwill, Peter M.

ATMOSPHERIC CARBON DIOXIDE AND THE BIOSPHERE. *Environ. Pollut., 1(4):249-261, April 1971. 56 refs.*

The increase in carbon dioxide concentration in the atmosphere, currently about 0.7-0.8 ppm/year, is reviewed, particularly in relation to the biosphere. The increase represents half the CO2 released into the atmosphere from the burning of fossil fuels over the past hundred years. This is consistent with changes in the carbon-14/carbon-12 ratio in the biosphere, given that the oceans have a limited buffering capacity for CO2 and only a shallow mixed layer in diffusion equilibrium with the atmosphere. The rate of fossil fuel consumption is increasing and it is probable that the CO2 concentration in the atmosphere, at present about 320 ppm, will reach 375-400 ppm by the end of the century compared with 290-300 ppm at the start of the century. The probable effects of such an increase on the rate of photosynthesis in the biosphere are reviewed. The assumption that both the rate of photosynthesis and carbon storage in the biosphere will increase in proportion to the increase in CO2 seems unreasonable since CO2 is unlikely to be the prime factor limiting the rate of photosynthesis in natural communities. Changes in atmospheric CO2 may be less significant in future plant production than the effects of clearing (reducing the photosynthetic area) and of pollution. (Author abstract)

12594 APTIC NO. 29897

Bachman, C. H., D. G. Hademenos, and L. S. Underwood

OZONE AND AIR IONS ACCOMPANYING BIOLOGICAL APPLICATIONS OF ELECTRIC FIELDS. *J. Atmospheric Terrest. Phys., 33(3):497-505, 1971. 11 refs.*

The relationship between point tip radius of barley leaves and steel needles, production of ozone, air ions, and current through the specimens was studied as a function of voltage applied between tip and a positive upper electrode. The range of electrical fields used included the space fields experienced in the atmosphere. For a point such as a tip of grass, the naturally occurring electric fields near the earth s surface may be increased 1000 times or more, easily reaching electric field strengths which will produce corona (10 to the 7th power V/m and up). Plant leaves generally have hairs and spikes of even smaller dimensions than the grass tip radius. Barley leaves, for example, have distributed along their edges spikes about 1000 times smaller in diameter than the tip radius. Fields near such projections will be correspondingly higher than for the tip and corona will occur under lower applied potentials. With overall applied fields of only a few hundred V/m, these localized regions may produce corona. This will be accompanied by the passage of current through the plant and by the production of, and exposure to, ozone and air ions as well as other products such as nitrogen oxides. It many previous investigations, biological effects have been attributed to electrostatic fields without taking into account these accompanying phenomena.

12595 APTIC NO. 29991

Bourbon, P., J. Tournut, J. Alary, J. F. Rouzard, and F. Alengrin

THE EFFECTS OF LOW LEVEL FLUORINE POLLUTION IN A MOUNTAIN VALLEY. *(Consequences d une pollution fluoree de faible importance dans une vallee de montagne). Text in French. Tribune Cebedeau, (Centre Belge Etude Doc. Eaux), 24(327):62-66, Feb. 1971. 8 refs.*

The effects of fluorine pollution from a phosphoric acid plant discharging daily 20 kg fluorine into the atmosphere of a mountain valley were studied. Ten % of the fluorine was emitted as dust, 25% was contained in aerosol form and in condensation on water and 65% in a gaseous state as SiF4 and HF. In an area of 15.2 sq km, fluorine concentration between 0 and 10 mcg/cu m were recorded over a period of 10 years. Cattle fodder was found to contain between 20 and 50 ppm fluorine contents in the jaws of cattle, signs of dental decay and dental enamel discoloration. This latter symptom was found in cattle living in the polluted zone for 3 years. Occasional lameness was observed in cattle living in the polluted zone for five years and feeding on fodder with a fluorine content of 50 ppm. Exostosis was not observed. While it is difficult to set a fluorine level for fodder which would never cause pathological changes in cattle because of contributory meteorological, ecological, nutritional and physical-chemical factors a maximal permissible level of 20 ppm should be considered a safe level.

12596 APTIC NO. 30059

Craker, Lyle E.

ETHYLENE PRODUCTION FROM OZONE INJURED PLANTS. *Environ. Pollut., 1(4):299-304, April 1971. 13 refs.*

In experiments to determine if ozone-injured plant tissue produces significantly larger quantities of ethylene than uninjured tissue, tobacco, tomato, and pinto bean plants were treated with ozone in a plexiglass box. After fumigation, the plants were sealed in bell jars. Differences in ethylene production between ozone treated and control plants were seen after two to four hours. These results indicate that ozone injury to plant tissue can induce ethylene production. Ethylene production appeared to be related to the extent of injury. More severe plant injury is a result of more cells being damaged by the pollutant and thus would induce more cells to evolve ethylene. These studies do not prove that injury symptoms seen in plants after ozone fumigation are due to ethylene. However, some physiological responses observed after ozone treatment have been previously reported as ethylene responses, and they may be a result of induced ethylene production from oxidant injury.

12597 APTIC NO. 30033

Cristea, I., R. Dulfu, P. Marian, and V. Dulfu

RESEARCH ON THE LEAD INTOXICATION OF THE GALLINACEANS. *(Recherches sur l intoxication par le plomb chez les Gallinaces). Text in French. Rec. Med. Vet. Ecole Alfort (Paris), 146(8):783-790, Aug. 1970. 5 refs.*

Gallinaceans, particularly the improved breeds and the young of all breeds, are sensitive to lead poisoning. The hens which are intoxicated by lead show apathy and a reduced appetite at the beginning of the disease. As the disease progresses, a state of nervous excitability and some visual problems are encountered. The production of eggs is small and the shell may be very fragile. Fertility and hatching are at a low level and the morbidity rate of young chicks is high. The quantitative determinations of lead showed an accumulation in the feathers, kidneys, and liver. Treatment with EDTA gave good results and ensured a rapid elimination of lead from the organism. (Author summary modified)

12598 APTIC NO. 29524

Dugger, W. M. and Irwin P. Ting

AIR POLLUTION OXIDANTS - THEIR EFFECTS ON METABOLIC PROCESSES IN PLANTS. *Ann. Rev. Plant Physiol., vol. 21:215-234, 1970. 100 refs.*

A review of the effects of ozone and peroxyacetyl nitrate on plants is presented. The photooxidative and photolytic reactions which cause nitrogen oxide, nitrogen dioxide, and hydrocarbons to form 03 and PAN are discussed. Light intensity during the growing period influences the susceptibility of plants to PAN and ozone. It has been found that an interaction of light, PAN, and plant tissue is essential for inducing damage. For ozone damage to pinto bean primary leaves, light is not required. A survey of the data regarding stomatal opening, and oxidant damage indicates that stomates must be open during exposure for damage to occur. However it is stated that stomatal opening and oxidant damage are not correlated. The sugar content of leaves may affect ozone susceptibility. A high sugar level protects by osmotic effects and closing of the stomates; a lower sugar level protects through a mechanism independent of stomatal operation. It has been found that ozone may damage cells by destroying the semi-permeability of the membranes. The effects of ozone and PAN on growth and metabolism, on photosynthesis, and on plant enzymes and also discussed in detail.

12599 APTIC NO. 29645

Gilbert, O. L.

FURTHER STUDIES ON THE EFFECT OF SULPHUR DIOXIDE ON LICHENS AND BRYOPHYTES. *New Phytol., 69(3):605-627, 1970. 34 refs.*

After comparing 16 aspects of their biology, it is clear that, despite wide differences in botanical affinity, bryophytes and lichens are similar in their response to sulfur dioxide. This suggests that these plants can colonize inhospitable habitats only by adaptations which possess an inherent susceptibility to air pollution. Extensive laboratory and field work has emphasized the controlling influence of habitat on the survival of species. One of the strongest modifying influences is shelter, which can greatly reduce SO2 levels. Another influence is the effect of pH and buffer capacity. Lesser, but easily, recognizable, alleviation is caused by nutrient flushing. Evidence was found that late seral stages are more sensitive than pioneer ones. The water relations of a site were once thought to be important, but were found to have little effect on survival. Only where a continual seepage of alkaline water prevents pH gradients from developing in bryophyte colonies does it have a significant effect. The study of those habitats which allow sensitive species to partially penetrate built-up areas showed that this is due to special environmental factors. It is suggested that those habitats which are vacated first due to increasing SO2 pollution posses physical attributes which emphasize the toxic effect.

12600 *APTIC NO. 30003*

Keller, Theodor

THE EFFECTS OF AIR POLLUTION ON VEGETATION. (Auswirkungen der Luftverunreinigungen auf die Vegetation). Text in German. Staedtehygiene (Uelzen/Hamburg), 22(6):130-136, 1971. 16 refs.

Generally two groups of air pollutants are distinguished when considering vegetation effects. Inert dusts can be taken by plants without injury; toxic gases, however, destroy them. Of all forms of vegetation the forest has the highest dust filtering capacity: one hectare of spruce forest binds about 32 tons of dust; 1 hectare of beech forest, 68 tons when the dust is washed off by rain, the filtering capacity is restored and the dust is mixed with the soil. Of the gases, sulfur dioxide is the most harmful. It is estimated that about 200,000 hectares of forest have been damaged in the German Democratic Republic by emission of SO2. The long-term maximum allowable emission concentration for SO2 in Switzerland is 0.2 ppm, which still seems to be too high. The SO2 which penetrates into the cells attacks the chlorophyll and causes chlorosis. It has been found that deciduous trees are much more resistant than coniferous ones. Through adequate fertilization the resistance of plants may be increased; through nitrogen fertilization growth is stimulated and injuries can be healed faster. However, through the higher assimilation, more pollutants may penetrate the plant organs. Further studies are needed to determine which one of these processes prevails.

12601 APTIC NO. 27489

Kobayashi, Jun, Fuji Morii, Shigeki Muramoto, and Susumu Nakashima

EFFECT OF AIR AND WATER POLLUTION ON AGRICULTURAL PRODUCTS BY CD, PB, ZN ATTRIBUTED TO MINE REFINERY IN ANNAKA CITY, GUNMA PREFECTURE. *(Gunma-ken Annaka-shi no seirensho ni yoru nosakubutsu nado no junkinsoku (Cd, Pb, Zn) osen ni tsuite). Text in Japanese. Nippon Eiseigaku Zasshi (Jap. J. Hyg.), 25(4):364-75, Oct. 1970. 30 refs.*

In an investigation of air and water pollution by zinc, lead and cadmium discharged from the zinc refinery in Annaka city, Gunma prefecture, agricultural products in the environs were sampled and the contents of the various metals were analyzed. The examinations were carried out twice: in October, 1968 and in June, 1969. The quantities were measured by the atomic absorption analysis method. The contents of the metals in mulberry leaves in the hilly regions 400-2500 m east of the refinery were: Cd 17 - 3.3 ppm, Zn 2590 360 ppm, Pb 160 - 41 ppm, and the contents of Cd and Zn showed a regression line, (Zn) equals 141(Cd) 107, r equal 0.998, indicating a mutual relationship. For agricultural products, the results were: fruit vegetables Cd 8.6 0.3 ppm, Zn 150 29 ppm, Pb 11 less than 0.4 ppm, root vegetables, Cd 17 - 14 ppm, Zn 530 100 ppm, Pb 63 less than 0.02 ppm; leaf vegetables, Cd 61 3.2 ppm, Zn 7010 - 380 ppm, Pb 370 - 4.3 ppm. As to barley and wheat, the highest levels were recorded as follows: Cd 6.8 ppm, Zn 310 ppm, and Pb 14 ppm. Moreover, the contents of Pb in barley and wheat growing in the fields more than 1500 m below the refinery showed higher levels than those of Pb in barley and wheat growing in the hilly Yaden region, which is 800 1250 m south of the refinery; the fact indicates that the effect of water pollution cannot be ignored. The contents of Cd and Zn in wheat in Yaden and Iwai region showed a regression line, (Zn) equals 41 (Cd) + 50, r equals 0.95, indicating significant relationships. Also in Yaden region, higher levels of metals were found in leaf vegetables compared with root vegetables and fruit vegetables and in Annaka city, rice was not the only polluted agricultural product but leaf vegetables were especially highly polluted.

12602 APTIC NO. 29998

LeBlanc, Fabius and Jacques De Sloover

RELATION BETWEEN INDUSTRIALIZATION AND THE DISTRIBUTION AND GROWTH OF EPIPHYTIC LICHENS AND MOSSES IN MONTREAL. *Can. J. Botany, 48(8):1485-1496, Aug. 1970. 16 refs.*

Although there exist no direct experimental proofs that the contaminated atmosphere of Montreal has exerted some influence on the present composition of the lichen and moss vegetation of this area, field studies were conducted which show that this vegetation has completely disapperaed from the nuclei of human implantations and that its presence, degree of abundance, and luxuriance in the peripheral parts appear, on the whole, directly related to its remoteness from industrial or residential zones. A simple method of mapping the long-range effect of air pollution on corticolous epiphytes is described. The map does not, however, produce any information on actual, or day by day, concentrations of phytotoxicants nor is it of any value in predicting pollution episodes. (Author conclusions modified)

12603 APTIC NO. 29746

Maeno, Michio

DAMAGE TO PLANTS BY AIR POLLUTANTS. *(Taiki osen busshitsu ni yoru shokubutsu higai). Text in Japanese. Preprint, Association of Safety Engineering, Yokohama (Japan), 40p., 1970. 118 refs. (Presented at the Association of Safety Engineering Seminar, 17th, Yokohama, Japan, Feb. 1970.)*

Plant resistance to various pollutants, environmental factors, damage to plants, diagnosis of the causes of damage and measurement of harmful substances in plants by chemical and physico-chemical analysis are described. It is desirable to cultivate the type of plants which are sturdy enough to resist poor environmental conditions, and efforts must be made to study the appropriate species and fertilization and cultivation methods. An equation for estimating the yield of plants damaged by sulfuric acid is given. The Kosaka method of measuring the damage to paddy rice by sulfuric acid gas averages the rate of adsorption of sulfuric acid gas and the rate of Mosaic lesions of leaves by gas damage. Physico-chemical analysis confirms the harmful substances and traces the change in physiological functions by using infrared ray absorption spectrum analysis. Gas chromatography is used to determine the concentration of formic acid in plants which were damaged by smog. Since it is almost impossible to confirm pollutants that originate in smog, ozone, nitrogen oxides, and exhaust gases from automobiles, it is important to measure the harmful substance in the atmosphere. Many of the harmful gases have strong acidic reactions, so that when they accumulate in the soil, they have serious effects on soil mechanisms.

12604 APTIC NO. 29671

Matsushima, Jiro

ON COMPOSITE HARM TO PLANTS BY SULFUROUS ACID GAS AND OXIDANT. *(Shokubutsu ni taisuru aryusangasu to okishidanto no fukugogai ni tsuite). Text in Japanese. Sangyo Kogai (Ind. Public Nuisance), 7(5):218-224, May 1971.*

The composite effects on plants of sulfur dioxide and ozone, SO2 and PAN (peroxyacetyl nitrate) SO2, and nitrogen dioxide, and NO2 and ozone were studied. Pinto bean plants were exposed to SC2 or O3 only, to each gas alternately, and to a mixture of the two. The degree of injury by the gas or gases was indicated in percentage by area of the leaves damaged. In cases where no geometric effect occurred the damage to the plant by the individual gas had been great; damage from the individual gas had been slight in those case where such an effect was observed. The geometric effect is produced when the density of SO2 is rather low, generally 0.05-0.25 ppm. A mixture of SO2 and O3 was applied to a tobacco plant; it affected fully grown leaves as reported by Menser. In experiments on the composite effects of SO2 and PAN on bean, tomato, and pepper plants, PAN affected mainly young leaves while SO2 affected mature ones. These effects were arithmetic rather than geometric. The SO2 and NO2 were also studied in the same manner. When SO2 and NO2 were mixed, a geometric effect was conspicuous in damage to vegetables, the symptoms of damage by either of the two appeared about the same, younger leaves being affected less. When treated with the two gases alternately, the damage was greater if the plants were first treated with NO2; possible causes for this effect are discussed. No significant composite effect of NO2 and O3 was observed.

12605 APTIC NO. 29616

McCune, Delbert C. and Leonard H. Weinstein

METABOLIC EFFECTS OF ATMOSPHERIC FLUORIDES ON PLANTS. *Environ. Pollut., 1(3):169-174, Jan. 1971. 25 refs. (Presented at the Firs International Congress of Plant Pathology, London, England, July 1968.)*

The metabolic effects of atmospheric fluorides on plants are reviewed. Studies of enzyme activity in vitro provided most of the information on the nature of fluoride-sensitive sites and the possible mechanism of fluoride inhibition. There are many fluoride-sensitive enzymes; therefore, the possibility of multiple sites of fluoride action exists. Isolated tissues have been used to study the effects of fluoride on metabolic systems in vivo. It has been shown that many metabolic pathways may be affected by fluoride and that the presence or type of effect depends on which pathways are operative. Several metabolic effects are associated with leaf necrosis. The rate of oxygen uptake was increased in beans and gladiolus exposed to hydrogen fluoride. Fluoride-induced inhibitions of O2 uptake have also been reported and the type of effect depended on the age of the plant, duration of exposure, nutrient status, and fluoride concentration. The concentrations or pool sizes of various metabolites are also affected by fluoride. Changes in keto acids, organic acids, amino acids, free sugars, DNA-RNA phosphorus, and starch and non-starch polysaccharides have been found in HF-fumigated plants. The effects of gaseous fluorides on glucose catabolism indicate that the pathways of respiration, monosaccharide interconvension, or polysacchride synthesis are the most likely sites of fluoride activity. The biochemical effects induced by fluoride, not associated with chlorosis or necrosis, are diverse and suggest that many different areas of metabolism can be affected.

12606 APTIC NO. 29597

Nakagawa, Yoshihiro, Shozo Matsuda, Masamichi Hara, Tahachiro Koyama, and Kokei Takada

ON DAMAGE TO PLANTS BY FLUORIDES IN EXHAUST GAS FROM TILE MANUFACTURING FACTORY. *(Uwagusurigawara seizo kojo haigasu chu fukkabutsu ni yoru shokubutsu higai ni tsuite). Text in Japanese. Hyogo Prefecture, Kobe (Japan), Environmental Science Inst., Rept. 2, p. 11-16, Feb. 1971. 9 refs.*

Crop damage occurred in the limited vicinity of glazed tile manufacturing plants in Hyogo Prefecture. The material clay for the tile contained fluorides, and damage to the carnation and rice plants was chiefly the withering of the leaf tips. Fluorides in the material clay, exhaust gas from the firing kiln, the atmosphere around the factories, and the damaged plants were examined. Fluoride in the material clay was 296-306 ppm. About 30% of the fluoride in the clay volatilized during the baking process. Also, the fluoride in the baked tile was about 208-214 ppm and in the exhaust gas was 1.7-4.4 ppm. Fluoride was 0.020-0.043 ppm in the environmental atmosphere, 52.3-54.3 ppm in the injured carnations and 179.3 ppm in the onions. The metal content in the exhaust gas was also analyzed, since the pigment used with about 80% of the manufactured tiles was copper oxide. The copper volatilizing during the baking process was measured as 10.6-66.8 microg/N cu m. Assuming it becomes diluted to 1 to 200 by atmospheric diffusion (about 200 m away from the source), the density will be about 0.05- 0.34 microg/N cu m, which can hardly affect the plants. Unlike lead, copper does not accumulate in living tissues, so it does not cause chronic poisoning. Total sulfide in the stack gas was estimated at 4.8-5.9 ppm. Taking into account the dilution of sulfide by atmospheric diffusion, the density is too low to adversely affect the plants. Therefore, the primary cause for damage to the plants was fluoride. However, possible geometric or arithmetric effects of various air pollutants may have to be further studied in connection with plant damage.

12607 APTIC NO. 29976

Nakashima, Yasuhiro, Yukihiro Hagihara, Seiji Ogawa, and Tameichiro Kawashima

STUDIES ON THE SMOKE DAMAGE OF TREES. (I) ON THE ACUTE DAMAGE SYMPTOMS BY THE SO2. *(Jumoku no engai ni kansuru kenkyu. 1. SO2 ni yoru kyusei shojo ni tsuite). Text in Japanese. Fukuoka-ken Ringyo Shikenjo Jiho (Bull Fukuoka-ken Forest Expt. Station), no. 21:23-50, March 1970. 13 refs.*

Acute damage (leaf burn) to essential staple tree-planting species by sulfur dioxide was investigated in 1968 and 1969. Sulfur dioxide concentration, exposure time, treatment methods, and SO2 density measuring methods were studied in a preliminary experiment. Damage symptoms and tree growth after treatment by SO2 (12 0.1 ppm) were observed in 35 species. The relationship between leaf lesions and tree age was also studied. Seedlings of the main species of tree-planting (1-2 tree-age) showed considerable damage from SO2 treatment of 10 ppm for 30 minutes. Also, the resistance of four species of forest trees to SO2 was as follows in order of strength: Chamaecyparis obtusa (Hinoki) was strongest, then Pinus thunbergii (Kuromatu), and Cryptomeria japonica (Sugi) and Pinus densiflora (Akamatu) were the weakest. Acute damage by SO2 appears mainly on the leaf tip of conifer trees, on the edge and central part of evergreen broad-leaves, and on the interveinal portion of deciduous broad leaves. Lesions differed for different species. Growth of trees after SO2 treatment seemed to be injured. The degee of, seedling health strongly effected the damage symptoms. Cryptomeria japonica, Chamaecyparis obtusa, Pinus thunbergii, and Pinus densiflora of different tree ages were treated by SO2; tree resistance increased with tree age. The difference between damage from chronic and acute exposure was that the former showed almost invisible and indistinguishable symptoms and the latter showed visible symptoms. Resistance was almost the same in chronic and acute exposure. The appearance of acute damage symptoms was helpful to judge plant resistance against SO2.

12608 APTIC NO. 29736

Quellmalz, E.

PROBLEMS OF FLUORINE EMISSION MEASUREMENTS. *(Problematik der Fluor-Immissionsmessung). Text in German. VDI (Ver. Deut. Ingr.) Ber., no. 164:77-83, 1971.*

The correct interpretation of measurements of the fluorine content in air presents some difficulties. The effect of the fluorine can vary depending on the type of compound in which it is present. Biologically, plants are most strongly affected by hydrofluoric acid, animals by free ions of fluorine. In addition to free hydrofluoric acid, other gaseous fluorine compounds can be present in the air, some of which are harmless, whereas others can undergo subsequent reactions and become harmful. It may be assumed that fluorine compounds penetrate the plant surface both in the form of gas and aerosols. The usually ill effects of fluorine compounds in plant food on animals can often be completely neutralized by feeding the animals simultaneously with fodder containing minerals. Emissions of fluorine from industrial sources can have different effects as air pollutants, depending on the industrial process involved. For instance, emissions from blast furnaces containing fluorine carrying dust are more harmless if alkaline substances, particularly lime, are prevalent in the dust. If acidic substances prevail, the fluorine emissin becomes far more noxious.

EFFECTS-MATERIALS

12609 APTIC NO. 30039

Burda, P., Vl. Marek, and M. Holinka

ATMOSPHERIC CORROSION OF THE ELECTROLYTIC NI-CR COATINGS. *(Atmosfericka koroze elektrolytickych Ni-Cr povlaku). Text in Czech. Povrchove Upravy, 7(1):8-11, Feb. 1967.*

Electro-chemical measurements proved that the atmospheric corrosion of nickel-chromium electro-coatings is governed by the cathodic process. The choice of individual metal coating layers for external atmospheric use within the meaning of the CSSR Standard 038410 was minimal to retain the metallic appearance of the coated parts in static atmospheric conditions in the presence of 0.18 g sulfur dioxide/cu m day for 1.5 years.

12610 APTIC NO. 29857

Cotton, J. B.

USING TITANIUM IN THE CHEMICAL PLANT. *Chem. Eng. Progr., 66(10): 57-62, Oct. 1970. 4 refs.*

With its excellent resistance to corrosion in many environments, particularly halides, with its ability to preserve the intrinsic purity of chemical products, and with its good fabricability, it is not surprising that titanium has taken its place among the more desirable materials of chemical plant construction. Because, for its corrosion resistance, titanium depends upon the protective nature of a surface film, essentially of oxide, the conditions under which the protective film is formed and is prevented from breaking down under adverse circumstances are discussed. An example is quoted of the practical use of electrochemistry, in the form of anodic passivation, to promote the growth of the protective film and extend the use of titanium to very aggressive environments that normally demand use of non-metallic materials.

12611 APTIC NO. 29995

Darras, R., D. Leclercq, and B. Chabert

EFFECT OF LOW SILICIUM CONTENT AND SOME SURFACE TREATMENT ON THE OXIDATION OF CARBON STEELS IN CARBON DIOXIDE ATMOSPHERES AT MEDIUM TEMPERATURES. *(Influence de faibles teneurs en silicium et de certains traitments de surface sur l oxydation des aciers ordinaires dans les atmospheres a base de gaz carbonique aux temperatures moyennes). Text in French. Werkstoffe Korrosion, 22(5):389-402, 1971. 15 refs.*

Carbon or low alloyed steels were corrosion-tested for 1000 hours at temperatures between 375 and 450 C in pressurized carbon dioxide (28 and 40 bars) containing carbon monoxide (1 to 2% vol) and water vapor (50 to 100 ppm vol). The steels included untreated steel, sand-blasted steel, steel etched in a sulfur phosphate bath, steel etched and then passivated in a bath composed mainly of sodium bichromate, and steel etched and passivated in a phosphate bath. The first passivating treatment causes development of a deposit on the steel surface, composed mainly of a chromium compound. Samples treated in this way are much more rapidly oxidized than those prepared in the second bath or the untreated samples. On the other hand, the absence of silicon (less than 0.02%) manifests itself through accelerated oxidation. The oxidation kinetics soon become linear, but remain rather slow when a similar steel contains at least 0.20% silicon. Both effects are cumulative. Very high corrosion levels stem from an unfavorable surface treatment applied to a steel without silicon.

12612 APTIC NO. 29717

Fujikawa, Fukujiro, Kunio Hirai, Teruhisa Hirayama, Mitsuo Fujii, Jiro Takimoto, Hiroshi Yamada, Hiroshi Kawaguchi, and Masanori Sawatari

THE INFLUENCE OF AIR POLLUTION UPON THE DISCOLORATION OF THE DYED STUFF AND THE DECREASE OF TENSILE STRENGTH OF SOME FIBERS. *(Taiki osen ga senshokubutsu no hentaishoku narabini sushuno seni no zeika nioyobosu eikyo nitsuite). Text in Japanese. Eisei Kagaku (J. Hyg. Chem.), 17(2):112-118, April 1971. 4 refs.*

The effect of air pollution on dyed stuff and some fibers was examined by exposure to air for three months. The exposure was made at 22 points in the Yamashina area in Kyoto city, from January to March, 1969. Acetate rayon cloth dyed with Diacelliton Fast Brilliant Blue B, knitting wool dyed with Orange I, filter papers dyed with several kinds of indicator, and silk, acryl, polyester, cupra, and nylon fibers were examined. During this period, sulfur oxides and nitrogen dioxide concentrations in the air were measured by the alkaline filter paper method once a month. Change in the color of dyed acetate rayon cloth correlated with the concentration of NO2, and that of dyed knitting wool to the concentration of SOx. Filter paper dyed with indicators visually showed the concentration of the pollutants. Acryl and polyester fibers showed no change, but cupra, silk, and nylon became fragile in that order. The fragility of cupra correlated with the concentration of pollutants.

12613 *APTIC NO. 29222*

Kamiyama, Keizo

AIR POLLUTION AND ATMOSPHERIC CORROSION. (Taikifushoku to taikiosen). Text in Japanese. Nippon Eiseigaku Zasshi (Japan J. Hyg.), 26(1):142, April 1971. (Presented at the Japanese Society for Hygiene, Annual Meeting, 41st, Tokyo, Japan, April 3-4, 1971.)

To study the relationship between metal corrosion and air pollution, various kinds of metals were exposed to the atmosphere for five yrs or more at weather bureaus and meteorological stations in various parts of Japan. The corrosive action was intense in severe polluted Tokyo and Kawasaki, and the coefficient of variation was small. The regressive relationship between the degree of corrosion/yr and atmospheric conditions (mean yearly temperature (deg)), mean yearly average humidity (%), mean yearly precipitation (mm), level of salt in the air (Cl; ppm of the exudation in accordance with Utsumi s method) over the period of exposure was as follows: the amount of corrosion (mdd) equals 0.484 times (deg) plus 0.701 times (%) plus 0.075 times (cl, ppm) plus 8.202 (SO2 mdd) minus 0.22 times (mm) minus 52.67. Using the above formula, the corrosive amount of milled, killed steel at various districts was sought. In the polluted area, a factor giving the effect of air pollutants equal to (the yearly average level of SO2 mdd minus 0.3) times 8.202 (which is increasing year by year) was added.

12614 APTIC NO. 29951

Lorenzen, Jerry A.

ATMOSPHERIC CORROSION OF SILVER. *Inst. of Environmental Sciences, Mt. Prospect, Ill. Proc. Inst. Environ. Sci. Annu. Tech. Meet., 17th, Los Angeles, Calif., 1971, p. 110-114. 6 refs. (April 26-30.)*

The corrosive effects of hydrogen sulfide, chlorine, and sulfur dioxide on silver were measured by determining the contact resistance (CR)--the property of primary concern with regard to failure of electronic equipment in corrosive atmospheres. The CR changes as a function of time were measured at different temperatures, relative humidity, air velocity, and gas concentrations. Sulfur dioxide had little effect on the corrosion rate of Ag, either alone or in combination with Cl2. The extent of corrosion in C12 alone was measurable, but small in comparison to that in H2S and H2S + Cl2 atmospheres. The corrosion rate was independent of temperature but increased rapidly at air velocities from 0-100 lineal ft/min and at a relative humidity higher than 50%. The fact that the dependence on humidity correlates with the amount of water adsorbed on the Ag surface suggests that corrosion in H2S-Cl2 atmospheres is due to the ability of these compounds to form sulfur in the presence of water. A rate expression derived from the experimental data provides a reasonably accurate estimation of the corrosion rate of Ag for the variables studied.

12615 APTIC NO. 29631

Misawa, T., T. Kyuno, W. Suetaka, and S. Shimodaira

THE MECHANISM OF ATMOSPHERIC RUSTING AND THE EFFECT OF CU AND P ON THE RUST FORMATION OF LOW ALLOY STEELS. *Corrosion Sci., 11(1): 35-48, Jan. 1971. 27 refs.*

The mechanism of atmospheric corrosion of steels, and the effect of copper and phosphorus on the rusting of low alloy steels was studied. The steels studied were exposed at industrial or urban sites for 9, 12, 43 months. Iron II hydroxo-complexes were prepared, and the oxidation of the precipitates was carried out for 30 hr at room temperature by the introduction of air at a constant rate of 1 liter/min. The pH value of the solution before oxidation was considered to be the most important factor in determining the end products. The delta-iron hydroxide formed on low alloy steels containing Cu, P, or chromium is transformed from Fe(II)-complexes to amorphous delta-FeOOH by the catalytic action of CU and P concentrated at the metallic surface. The amorphous delta-FeOOH rust forms a cohesive and compact rust-layer, which constitutes a protective barrier during atmospheric corrosion. The superior corrosion resistance of low alloy steels in atmospheres containing sulfur dioxide can be elucidated by taking account of the fact that sulfuric acid accelerates the corrosion rate so that the concentration of Cu or P on the metal surface rapidly increases. The wet-dry cycle favors the formation of a compact rust layer. Infrared absorption spectra of the rust formed on mild steel and low alloy steel have revealed that the most important constituent is fine particles of delta-FeOOH, which has been reported previously as X-ray amorphous matter. (Author conclusions modified)

12616 APTIC NO. 29783

Rasch, Rudolf

COMPLEX ALKALI IRON SULFATES A CONTRIBUTION TO THE THERMODYNAMICS OF FIRESDIDE HIGH-TEMPERATURE CORROSION. *(Komplexe Alkali- Eisen-Sulfate Beitrag zur Thermodynamik der Feuerseitigen Hochtemperaturkorrosionene). Text in German. Chemiker. Ztg. (Heidelberg), 95(9):405-414, 1971. 69 refs.*

The present state of high temperatures corrosion research (hydrogen chloride, sulfate, and sulfide corrosion) is surveyed. In the combustion chambers of boiler furnaces and incinerators, incrustation of the heating surfaces is the first step toward corrosion. Corrosive agents in the flue gas and fly dust such as sulfur trioxide, sodium sulfate, HCl, sodium chloride, sulfur dioxide, hydrogen sulfide, and sodium sulfite are the direct or indirect causes of corrosion. Fireside high-temperature corrosion is closely related to the frequent changes between reduction and oxidation. With the aid of thermodynamic equations, the reaction mechanism at the reduction of oxide layers on the heat exchangers could be determined. Moreover, the assumptions concerning the reaction mechanism which causes sulfates to concentrate on the heat exchanger surfaces could be narrowed by thermodynamic calculations. The formation of the intermediate incrustating or wetting layers is to some extent due to the complex alkali-iron sulfates. Solutions of alkali sulfates with iron sulfates occur under the formation of complex compounds, as well as alkali-aluminum-sulfate complexes, sulfates of other heavy metals, and arsenic compounds. External pipe erosions are due to hydrogen chloride corrosion, local erosions are due to sulfide corrosions.

12617 APTIC NO. 29472

Razumovskii, S. D., A. A. Kefeli, and G. E. Zaikov

DEGRADATION OF POLYMERS IN REACTIVE GASES. *Eur. Polym. J., 7(3):275-285, Aug. 1971. 11 refs.*

The kinetics and mechanism for the reaction of ozone with polymers with main chains containing double bonded carbon-carbon, aromatic rings or saturated hydrocarbon links were studied. The reaction proceeds through unstable intermediates such as bipolar ion or peroxy-radicals which can isomerize or degrade, causing decomposition of macromolecules. Equations for degradation rates are suggested, taking into account the rates of separate stages of the complex reactions. A method for determinig rates and rate constants for reactions of ozone with polymers was found; constants for 12 polymers and important functional groups have been given. (Author abstract)

12618 APTIC NO. 29956

Rogner, Walter

PROBLEMS IN INDUSTRIAL POWER PLANTS. *(Probleme des industriellen Energiebetriebes). Text in German. Energie (Munich), 23(4): 119-123, April 1971. 13 refs.*

The use of fuel oils containing vanadium leads to corrosion of super heater pipes on the flue-gas side. During combustion, vanadium fractions of the oil reacts with oxygen to form vanadium pentoxide, which is highly corrosive, primarily in its liquid state. On combustion of fuel oils also containing sodium and sulfur fractions, complex oxygen compounds develop with eutectic melting temperatures of 580 C. Although these eutectica are less corrosive than V205, they nevertheless attack heating surfaces. The rate of corrosion depends on the ash composition and the ash quantity, as well as on the type of material. Vanadium-containing material is susceptible to corrosion while steel with a high chromium low nickel content is quite resistant. Fuels with a V203/Na20 ratio of smaller than 0.9 are less corrosive. Combustion of sulfur-containing fuels leads to formation of sulfur dioxide, which upon cooling to less than 700 C reacts with the free oxygen of the flue gases to form SO_3, when cooled to below 500 C, SO_3 reacts with the water vapor produced by the combustion process to yield sulfuric acid. This condenses on surfaces with temperatures between 80 and 160 C.

12619 APTIC NO. 29866

Suga, Nagaichi and Koichi Taniguchi

STANDARD FADING CLOTHES FOR OXIDANTS. *(ISO no okeru ozone- taishoku no shomondai). Text in Japanese. Taiki Osen Kenkyu (J. Japan Soc. Air Pollution), 5(1):80, 1970. (Presented at the Japan Society of Air Pollution, Annual Meeting, 11th, Japan, 1970.)*

The results of a color fading test of dyed clothes are presented with respect to oxidants in the air using the method of International Organization for Standardization (ISO) and Japan Industrial Standard (JIS). The color fading of acetate and nylon test clothes to light and ozone were compared. In the open air tests, color fading was accelerated by the wind.

12620 APTIC NO. 28810

Thomas, H. E. and H. N. Alderson

CORROSION RATES OF MILD STEEL IN COASTAL, INDUSTRIAL, AND INLAND AREAS OF NORTHERN CALIFORNIA. *In: Metal Corrosion in the Atmosphere. Am. Soc. Testing Mater. Spec. Tech. Publ., no. 435:83-94, 1968. 7 refs. (Presented at the American Society for Testing and Materials, 70th Annual Meeting, Boston, Mass., June 25-30, 1967.)*

The corrosion rate of mild steel specimens was determined at 15 sites in Northern California. Weight loss with time was measured and generally found to be greater during the first year than in succeeding years. These sites included coastal, marine, bay, and steam-geyser areas. The methods of specimen preparation, corrosion product removal, and exposure location details are covered. The repeatability of the tests was checked and found to be good at two locations, and the agreement with ASTM results at the Point Reyes exposure test site was reasonably good. Effects of weather are discussed. (Author abstract)

12621 APTIC NO. 30112

Valand, T.

CORROSION OF NACL-CONTAMINATED FE IN HUMID ATMOSPHERE OF LOW O_2 CONTENT. *Corrosion Sci., 11(4):197-207, April 1971. 10 refs.*

The atmospheric corrosion of sodium chloride-contaminated iron has been investigated by a gravimetric method. The atmosphere, which consists mainly of nitrogen, had an oxygen pressure which was varied between 0.2 and 25 torr. The humidity was 92.5%. At low O_2 pressure, a time-independent corrosion rate was observed. The rate increases with increasing O_2 pressure and increasing amounts of NaCl on the metal surface. Above 7 torr O_2 pressure, a meta-stable state was formed, at which the corrosion rate was independent of pressure. After a while, increasing corrosion was observed in this pressure range. The corrosion rate was then proportional to the time, until a limiting rate was reached. (Author abstract)

12622 APTIC NO. 29826

Vesely, Rudolf

OXIDATION STUDY ON ATMOSPHERIC AGING OF POLYMERS. *(Sledovani oxidace pri povetrnostnim starnuti polymeru). Text in Czech. Plasticke Hmoty a Kaucuk (Prague), 8(3):70-73, 1971. 8 refs.*

The oxidation degradation of polymers under atmospheric aging conditions was studied. During the exposure and continuous infrared analysis, samples in the form of thin sheets proved advantageous. Examples of the application of the results are given, expressed by polymer oxidation curves.

12623 APTIC NO. 30022

Wahnschaffe, E.

A STUDY OF THE CONVERSION OF SO_2 TO SO_3. *(Ein Beitrag zur Umwandlung von SO_2 zu SO_3). Text in German. Energie (Munich), 23(5):165, May 1971.*

Sulfur dioxide and sulfur trioxide, which to some extent are responsible for corrosion problems, develop from the combustion of sulfur-bearing fuels. The reactions of the individual components of the flue gas must be known to determine the factors influencing the conversion of SO_2 to SO_3. The total nitrogen content in the flue gases is dependent on the boiler load; it increases with increasing load. If the oil is efficiently atomized, thereby improving the addition of primary air, the concentration of nitric oxide is reduced. The development of nitrogen oxides depends on the load, the oxygen content, and the fuel/air mixture; these oxides have considerable influence on the conversion of the sulfur oxides. Their concentration is highly significant in boiler corrosion.

12624 APTIC NO. 29922

Weller, Joachim, Gertraude Kaehling, and Roland Weissgerber

ALUMINUM MATERIAL FOR THE CHEMICAL INDUSTRY. *(Aluminiumwerkstoffe fuer die chemische Industrie). Text in German. Chem. Tech. (Berlin), 23(3):162-168, March 1971. 32 refs.*

The uses of aluminum alloys and pure aluminum in the chemical industry are reviewed. Pure aluminum and AlMg and AlMgSi can be used in normal, clean atmospheres. Their suitability in a corrosive atmosphere, such as industrially polluted air, was tested over a five-year period. In one series of experiments, aluminum samples were exposed to the atmosphere 1.5 to 5 km from the following pollution sources: a cellulose and artificial silk factory, a steel-casting plant, a glass manufacturing plant, and a remote heating plant. In a second series, the samples were exposed to an atmosphere heavily polluted by gases and dusts from a chemical complex. The corrosive effect was determined from the loss of strength. In the first case, little or no corrosive damage was observed. In the second case, a negative effect was found. With the aluminum alloys, however, the negative influence became smaller with increasing exposure time.

EFFECTS-ECONOMIC

12625 APTIC NO. 29992

THE ECONOMIC IMPORTANCE OF HEAT RECOVERY FROM HOUSEHOLD REFUSE INCINERATORS. *(Interet economique de la recuperation de chaleur dans les usines d incineration d ordures menageres). Text in French. Rev. Gen. Thermique (Paris), 10(110):127-142, Feb. 1971. 1 ref.*

Part of the operating cost of refuse incineration can be recovered in large enough installations by the recovery of heat if an outlet exists for such energy. Under practical conditions, the expense connected with the purification of combustion gases from incinerators can be partly offset by the construction of a heat recovery installation. The heat recovery effectiveness for incinerators burning 4, 8 and 16 tons refuse/hour is 55, 60 and 65% respectively. The supplemental investment needed for heat recovery in the form of steam from three incinerators processing 4, 8 and 16 tons refuse/hour respectively was calculated to amount to 145,297 and 550 thousand Francs respectively (approximately 30 and 100 thousand dollars). The excess yearly operating expenses of incinerators with heat recovery over incinerators without heat recovery were calculated to amount to 120,234 and 429,000 Francs respectively. The maximal price which can be obtained for one ton of steam used for urban residential heating or for industrial purposes was calculated to amount to from 8.2 to 8.7 Francs for installations supplying yearly from 34-163,000 tons steam of 570 k/cal/kg.

12626 APTIC NO. 30054

Nordrhein-Westfalen Arbeits-und Sozialminister (West Germany)

THE ECONOMIC IMPORTANCE OF POLLUTION CONTROL. *(Wirtschaftliche Bedeutung der Luftreinhaltung). Text in German. In: Reinhaltung der Luft in Nordrhein Westfalen. Essen, West Germany, Brinck and Co. KG, 1969, p. 66-70.*

Air pollution control involves economic as well as technical problems. Industrial enterprises with 100 employees or more spent in Nordrhein-Westfalen a total of 247 million DM per year on pollution control in 1966, 1967, and 1968. Overall expenditures from 1955 to 1968 are estimated to be about $700 million. All costs for pollution control must be born by the polluters. To encourage pollution control, higher depreciation rates have been allowed, cheaper credits made available (4% for 17 years) by the state treasury; interest subsidies granted to borrowers from higher interest commercial banks, special federal credits made available (5% for 18 years), and repayment by borrowers of capital investment funds for pollution control installations guaranteed by the State.

12627 APTIC NO. 30128

FAST WRITE-OFF AND OTHER TAX RELIEF. *Foundry, 99(4):AP30-AP32, April 1971.*

The 1969 Tax Reform Act permits industry to amortize the cost of a pollution control facility over a period of five years, starting either the month after acquisition or in the following year. The fast write-off is in lieu of deduction for depreciation, except that the additional first-year 20% depreciation allowance is available. Industry generally favors an immediate write-off, tax credits, and state and local tax exemptions. In the past, tax credits ran into opposition on the Federal level. Now, however, there is recognition that the cost of abatement should be shared and that tax credits, together with loans and grants, represent a sharing between the polluter and public. Offsetting the sharing concept is the concept of a pollution tax, being advanced by some officials. Industry spokesmen are warning that such a tax would let polluters simply pay up and keep on polluting.

12628 APTIC NO. 29879

Gutow, Bernard

HOW EMISSION CONTROL AFFECTS MELTING COSTS. *Foundry, 99(5):76-80. May 1971.*

Estimates are presented of capital and operating costs of emission control systems for iron foundry melting furnaces. The data are for foundries with cupolas controlled with high-energy wet scrubbers or fabric filters and for electric furnaces controlled with fabric filters. Differences in installation dates have been compensated for by converting investment costs to a common base of 1969 dollars. Capital costs considered include basic equipment, auxiliary equipment, engineering, and installation. Basic and auxiliary equipment costs are the main components of total capital costs, varying from 41 to 85% of total costs. Factors influencing capital costs of cupola control systems include construction materials, water supply and solid disposal, and erection costs. Costs of electric arc control installations are influenced by type of exhaust hood, complexity of the ductwork, and cost of baghouse. Total investment costs for both scrubbers and filters vary directly with gas volume throughput and increase with increased pressure drop. Operating costs considered include electrical power and makeup water. For wet scrubbers, these are the major costs. Cost-per-ton curves, comparing 1000, 2000, and 4000 hr/yr levels of operation, indicate that the cost per ton of melt rises rapidly as the size of the foundry operation decreases.

12629 APTIC NO. 30122

Hollander, Herbert I.

VALUE ANALYSIS OF COAL. *Combustion, 41(10):13-17, April 1970. (Presented at the Purdue Industrial Coal Conference, Oct. 8, 1969.)*

Guidelines are presented which will enable spreader stoker-fired boiler plants to select the most economical and suitable fuels. The guidelines concern the following factors judged to influence utilization by such plants of the available BTU in coals: moisture, coal fines, ash quantity, ash characteristics (ash fusion temperature, iron oxide), sulfur, and heating value. Use of the guidelines to determine relative cost/million BTU is illustrated by graphs and a Relative Coal Utilization Analysis Sheet (showing chemical analysis of the coal and ash and the percentage of particulates passing through screens).

12630 APTIC NO. 29144

Humphries, J. J., S. B. Zdonik, and E. J. Parsi

AN SO2 REMOVAL AND RECOVERY PROCESS. *Chem. Eng. Progr., 67(5):64- 68, May 1971.*

Factors influencing the costs of electrical utility application of the Stone and Webster/Ionics sulfur dioxide removal and recovery system are discussed. This process is a wet caustic scrubbing process with closed circuit electrolytic regeneration of the process fluids. Sulfur dioxide is absorbed in a solution of sodium hydroxide. The resulting liquor is further reacted with dilute sulfuric acid to form sodium sulfate. This reaction frees the SO2 which is stripped from the solution, dried, and processed to concentrated sulfuric acid. Costs of the absorber system, recovery system, and cell and power supply systems are given for the case of a 1500 Mw three-unit station. For this plant the process costs $15/installed kw and operates at a total cost of $0.50/ton of coal burned. Examined on the more practical basis of daily ton of acid produced, plant costs are about $19,000/daily ton of acid. The rate of return after taxes is about 8%. Depending on choice of plant components, the process could cost between $9.46-$62.50/kw.

12631 APTIC NO. 29590

Kertesz, Magda and Z. Morlin

THE PRESENT RESULTS OF DETERMINATIONS OF 3,4-BENZPYRENE IN THE AIR OVER BUDAPEST. *(Die bisherigen Ergebnisse der 3,4-Benzpyren- Bestimmungen in der Luft von Budapest). Text in German. Wiss. Z. Humboldt Univ. Berlin Math. Naturw. Reihe, 19(5):517-518, 1970.*

Extensive tests of carcinogenic air pollutants in the city of Budapest were conducted with special attention to 3,4-benzpyrene. Analysis was by thin-layer chromatography using cyclohexan- benzol 4:1 as solvent and the absorption spectrometer for spectral analysis. Of the three methods of sampling employed (high volume sampling through paper, glass fiber, or plastic filters; sedimentation; and snow sample collection in winter), the first was the most exact. Results showed the concentration of 3,4-benzpyrene in settled dust to be higher in the inner city than in the suburbs. Concentrations in summer were considerably lower than winter; values in winter were between 1.4 and 4.2 micrograms per gram of dust. Snow samples revealed a higher content of 3,4-benzpyrene than settled dust samples. A very high concentration, 30 micrograms benzpyrene per gram of dust, was found in the city tunnel. In extensive tests of air samples the content of benzpyrene in aerosols was found to be relatively higher than in the dust deposited on the ground.

12632 APTIC NO. 29892

Kishi, Hitoshi

ON EXAMPLE OF PRACTICAL APPLICATION OF DUST COLLECTOR FOR ELECTRIC FURNACE FOR FERRO-ALLOY. *(Feroaroi yo denkiro no shujinki no jitsurei ni tsuite). Text in Japanese. Fuero Aroi (Ferro Alloy J.), 19(2):71-74, Dec. 1970.*

The installation and operation costs of three bag filter dust collectors for electric furnaces in a carbide manufacturing plant are reported. Two of the dust collectors have a capacity of 1500 cu m/min at 130 C; capacity of the third is 3750 cu m/min at 130 C. The new equipment replaced inefficient cyclone type dust collectors in 1968. Installation costs were $133,000 each for the first and second units and $192,000 for the third. The annual operating cost is about $224,000 or $13.00 per ton of the manufactured product (annual production, 26,000 tons). Installation and operating costs are itemized. Problems and remedies during the first several years of operation are also shown in detail.

12633 APTIC NO. 29923

Schreiber, Michael

THE COSTS FOR MAINTENANCE OF CLEAN AIR. THE INFLUENCE OF SOCIAL COSTS ON THE SELECTION OF AN INDUSTRIAL SITE. *(Kosten der Luftreinhaltung. Der Einfluss der social costs auf die industrielle Standortwahl). Text in German. Wasser Luft Betrieb, 15(4):145-148, 1971. 27 refs.*

Because of the cost of eliminating brown smoke emissions, Thomas converters were replaced by oxygen lancing converters. An 80-ton Thomas converter emits about twice as much waste gas as an oxygen lancing converter of the same capacity. Similar changeovers to processes with less waste gas production were made i the chemical industry to save waste gas cleaning costs. Sulfur emissions are reduced mainly by switching to low-sulfur fuels, a much less expensive means than desulfurization of the fuel or the flue gases. Such steps are not always possible. In many cases investment in dust collectors, electrostatic precipitators, and scrubbers are unavoidable. The economy of such units depends on the ratio between collection efficiency and maintenance costs. For electrostatic precipitators investment costs rise proportionally to the degree of collection in the efficiency range between 80 and 95%. A collection efficiency of 95 to 98% requires facilities which are 50% larger, increasing costs by 35% and more. The aluminum industry spends an estimated $50/ton of aluminum of its annual production for facilities to eliminate fluorine emission. The annual operating costs per ton of aluminum are estimated at $8.40. Metallurgical plants spent similar amounts for reduction of their emissions.

12634 APTIC NO. 30087

Seki, Toshio

ON OUTLINE OF MACHINERY CREDIT INSURANCE AND ITS APPLICATION TO DUST COLLECTION EQUIPMENT. *(Kikairui shinyo koken no aramashi to shujinsochi no toriatsukai ni tsuite). Text in Japanese. Sangyo Kogai (Ind. Public Nuisance), 7(5):233-240, May 1971.*

Effective in 1971, the machinery credit insurance program operated by the government since 1961 becomes applicable to dust collecting equipment. The government insurance, established to promote sales of machinery on easy payment terms by insuring the sellers against unpaid credits, originally applied only to unit machinery such as machine tools and tractors. The decision to include dust collecting equipment was taken in recognition of industry needs financial aid in combating increasing environmental pollution. It is a blanket policy insurance contracted between the insured party and the government for the specified period (from date of the contract to the end of each government fiscal year), making all applicable items sold during the period automatically insured, provided the following conditions are met: a machine will be paid for in three or more installments over six or more months from date of delivery; the period from date of delivery to date of the final settlement is within 24 months; the buyer is not on the government s blacklist, the machine is brand new; when the buyer is a trading firm, the payment should be settled by a draft issued by the end user and endorsed by the trading firm. The dust-collecting equipment covered by the insurance includes not only the collector, but also other integral units. Equipment costing more than $140,000 per set is excluded from the insurance. The insurance premium is very low, only 0.43% for the equipment sold for a 20 month easy payment. The insured can ask for a reimbursement amounting to 50% of the loss after a lapse of one month from the date when he becomes eligible for reimbursement. A sample application form and other forms are shown.

12635 APTIC NO. 29143

Tsaros, C. L., J. L. Arora, and W. W. Bodle

SULFUR RECOVERY IN THE MANUFACTURE OF PIPELINE GAS FROM COAL. *Ind. Eng. Chem. Prod. Res. Develop., 9(3):362-368, Sept. 1970. 18 refs.*

Increasing U. S. sulfur needs will probably be met largely by desulfurization of fuels. Twenty percent of U. S. coals contain over 3% sulfur. In the manufacture of pipeline gas from 1.5 and 4.4% sulfur coals, 15-25% of the sulfur is converted to sulfur dioxide during pretreatment; most of the remainder is converted to hydrogen sulfide hydrogasification. The economics of sulfur recovery from H_2S only and from joint H_2S and SO_2 by the Claus reaction are presented. Over-all sulfur recoveries are 91 and 81% for low and high-sulfur coals. In the $20-$40 per ton of sulfur price range, the pipeline gas price is lowered from 0 to 1 and from 1.5 to 5.5 cents per million Btu for the 1.5 and 4.4% sulfur coals, respectively. (Author abstract)

STANDARDS AND CRITERIA

12636 APTIC NO. 29756

Tokyo-to (Capital City Development Bureau) (Japan)

THE GUIDANCE STANDARD OF THE EQUIPMENT FOR TREATING EXHAUST GASES FROM THE FACTORY (FORMALDEHYDE):APR. 1970. *(Kojo haigasu shori shisetsu shido hyojun. (Horumuarudehido):Showa 45 nen 4 gatsu). Text in Japanese. 59p., May 1970.*

This guide was prepared for the purpose of specifying standard equipment for disposing exhaust gases from a formaldehyde factory and as a standard of the administrative directions, to promote air pollution control in Tokyo. Its object is a comparatively small formaldehyde factory; and a cheap, easy disposal method is chosen. The equipment stipulated for treating exhaust gases is a filling tower, or a scrubber of equal or greater capacity. It permits catalytic oxidation by means of a platinum catalyst, in cases where the use of washing water is undesirable. Reasons why the equipment was chosen are provided. The standard of exhaust density is 100 ppm at the maximum, and 50 ppm at the average for the period of activity of the equipment. General properties of formaldehyde are listed, as are the sources of its discharge, the washing apparatus, the method of analyzing for formaldehyde, and the method of catalytic burning. Various methods and apparatus are compared and, reference books on each item identified. The present conditions of enactment of regulations by the local self-government bodies are stated.

12637 APTIC NO. 29604

Gockley, Gene H.

INDUSTRIAL REACTION TO SULPHUR DIOXIDE CONTROL EQUIPMENT AND STANDARDS. *Pennsylvania State Univ., University Park, Center for Air Environment Studies, Proceedings of the Annual Conference on Air Pollution Control Engineering Aspects, Allentown, Pa., 1971, p. 31-44. (Paper 202-71.)*

With regard to the adoption of criteria limiting the amount of sulfur dioxide in the atmosphere, the power industry believes that the use of tall stacks should be allowed until other suitable control equipment is available to control SO_2 emissions. Those coals presently available to industry have sulfur contents ranging from 1 1/2-3 1/2%, while to comply with the proposed SO_2 control regulations most of industry would have to burn coal with a sulfur content of 1% or less. More than twenty processes have been proposed for removing SO_2 from flue gas. All are chemically feasible and can be demonstrated in the laboratory on a test tube scale, but only three have been seriously proposed or tried either in full size in a small plant or as a pilot model. Advantages, disadvantages, and costs are discussed for limetsone injection and wet scrubbing, catalytic oxidation, and chemical (alkaline) scrubbing.

12638 APTIC NO. 29003

Grillot, R. and J. Falque

ATMOSPHERIC POLLUTANTS FRENCH LEGISLATION. STANDARD MEASURING METHODS. RECENT COMMERCIAL APPARATUS. *(Les polluants atmospheriques. Legislation francaise. Methodes de mesure normalisees. Appareils recemment commercialises). Text in French. Tech. Moderne, 63(2):69-73, Feb. 1971. 22 refs.*

Current French legislation stipulates maximal permissible atmospheric levels of dust, sulfur dioxide, nitrogen oxides, carbon monoxide and of hydrocarbons but stricter regulations are being worked out and supplementary legislation is in the making. Presently the maximal levels apply only to combustion products, in other installations a compromise is being sought between what is technically possible and economically feasible. The maximal permissible levels are 0.05% CO, 500 mg N/cu m dust (for coal with more than 35% ash), 350 mg N/cu m dust (for coal with less than 35% ash), 1 mg N/cu m SO_2/24 hours. The measuring apparatus measuring dust emission which have recently been introduced commercially include gravimetric and opacimetric devices and devices based on physical characteristics of particulates. Devices currently available for atmospheric dust level measurement include a turbocaptor by Flinois Enterprises, a conimeter by Zeiss, Sartorius and others, a gravimetric dust sampler of British manufacture, Opale 500 by Cosma, apparatus beta by Saphymo, an atmospheric dust catcher by Cosma (polyurethane sponge filter), the Porticon collector (Sartorius), a Bausch and Lomb photometer, the particle counter Royco, the particle scintillation counter (Sartorius) and the Lidar (light detection and ranging) device for Laser Associated. Continuous measuring apparatus for gaseous pollutants available include for SO_2 devices by Beckmann, Calibrated Instruments, Instr. Devel. Co., Kimoto, Scientific Industries, Paris Labo, Technicon, Precision Devel. Co., Barton Inst. Co., for $NO-NO_2$ the autoanalyzer by Technicon, for CO the URAS apparatus and the Rubis 300 by Cosma and for hydrocarbons the Beckmann flame ionization apparatus. The working principles of the devices listed are described.

12639 APTIC NO. 29543

Nagelschmidt, G.

COMPARATIVE STUDY OF PERMISSIBLE LIMITS OF AIR DUSTINESS IN VARIOUS COUNTRIES. *(Etude comparative des seuils d empoussierage en usage dans les differents pays). Text in French. Lab. Central des Services Chimiques de L Etat, Paris (France) and Inst. National de Securite pour la Prevention des Accidents du Travail et des Maladies Professionnelles, Paris (France), Colloq. Securite Sociale Serv. Prevent., 3rd, Paris, France, 1955, p. 20-24. 7 refs. (Nov. 3-5.)*

Maximum allowable values of dust content in the air, as well as standard methods of measuring dust, vary from country to country. Basically, one differentiates between carbon dust and silica rock dust. In Belgium, the degree of dustiness is tested by paper filters through which air is pushed by means of a hand pump. Using the reduction of light transmission through the paper as a parameter, the reduction after ten pump strokes should be between 55 and 75%. The latter value is approximately equivalent to 900 particles between one and five microns per cu cm air, measured by thermal precipitation. In France, the maximum of 1000 particles or less than five micron per cu cm air is recommended as a limit for safe working conditions in coal mines. In Great Britain, 850 dust particles of one to five micron size per cu cm air are considered acceptable for coal mines; for anthracite the figure is 650. Testing is by thermal precipitation. In Holland, the recommended limit is expressed by the weight content established by the soluble filter method. The limit for coal dust is 100 mg per cu m air. In Italy, a maximum of 100 quartz dust particles of 0.8 to 5 micron per cu m air is suggested and the maximum is 500 for dust containing less than 10% quartz, again measured by thermal precipitation. In the U.S.A., the allowable dust concentration in working areas varies with the silica content, between 200 particles per cu cm for 80% and 700 particles for 25% or less of silica. The preferred method of dust measurement is with a midget impinger.

12640 APTIC NO. 30069

Plassmann, Eberhard

IT BEGAN WITH THE SMOG IN CALIFORNIA. CALIFORNIA TEST, EUROPEAN TEST--INTERNATIONAL REGULATIONS OF AUTOMOBILE EXHAUST GAS EMISSIONS. *(Mit dem kalifornischen Smog begann es. Kalifornien- test, Europatest--Internationale Automobilabgas-Reglements). Text in German. Umwelt (Duesseldorf), 1(2):26-30, 1971. 13 refs.*

Automobile emissions can be divided into emission from crank case ventilation, emission from evaporation losses (in both cases hydrocarbons are emitted), and emission of carbon monoxide, nitrogen oxides, sulfur oxides, and lead compounds in exhaust gas. Automotive emissions limits have been introduced for the first time in California. To determine the composition of the exhaust gas at the various operating cycles, the California test was worked out. This test comprises seven phases and simulates operating conditions for typical drive through Los Angeles and its suburbs on a dynamometer. The program begins with a cold start. Concentrations of CO, C_6H_{14} for the unburned hydrocarbons, carbon dioxide, and nitrogen oxides are recorded continuously. In 1966, the CO concentration was limited for Otto engines to 1.5% by volume and to 0.275% by volume of unburned hydrocarbons. Further reduction of these limit concentrations are stipulated for the years 1972 to 1974. West Germany has also imposed limits on automotive emissions; the CO concentration of warm engines cannot exceed 4.5%; the hydrocarbon emission cannot exceed 0.15% of the fuel consumption during the test operation. The various European governments are attempting to bring their national legislation in harmony with that of other countries.

12641 APTIC NO. 29113

Semling, Harold V., Jr.

HOW THE LAWS AND AGENCIES AFFECT YOU. *Foundry, 99(4):AP-14 to AP-17, April 1971.*

Air pollution legislation from the Clean Air Act of 1963 to the Clean Air Amendments of 1970 is summarized, with the timetable for conformance under the 1970 law spelled out. Activities of the new federal agencies that will have a strong effect on environmental matters also are described. These agencies are the Council on Environmental Quality, the National Industrial0 Pollution Control Council, and the Environmental Protection Agency. The latter will have the greatest affect on air polluters. Its job is to set up national air quality standards, to devlop air control technology, to see that regulatory programs are established at federal, state, and local levels, and to enforce the programs. The EPA standards of concern to foundrymen are listed. (Author abstract modified)

12642 APTIC NO. 29574

Sidorenko, G. I. and M. S. Goldberg

CRITERIA OF INJURIOUSNESS AS THE BASIS OF STANDARDS OF THE HYGIENE OF THE AIR. *(Schaedlichkeitskriterien als Grundlage lufthygienischer Normen). Text in German. Wiss. Z. Humboldt Univ. Berlin Math. Naturw. Reihe, 19(5):451-454, 1970.*

A Californian regulation of 1955 standardizes permissible concentrations of four air pollutants (carbon monoxide, nitric oxide, sulfur dioxide, and ozone) expressed in three stages of intensity: warning, alert, and danger. The first is defined as causing irritation of sense organs, damage to vegetation, and deterioration of visibility. The second can cause damage to the function of the organism and induce chronic illness. The third may cause acute illness or death. The Federal Air Quality Act of 1967 deals in detail with the toxicology of individual materials based on American and foreign literature, as a basis for air quality criteria. In the Soviet Union, the Standardization of permissible concentrations is based on physiological indices, particularly the effect of microconcentrations of injurious substances on the human organism. The term MIK (maximum emission concentration) explained. Hygienically admissible limits of concentrations are defined as values at which no restrictions of personal comfort and well-being and no direct or indirect injurious effects occur. The short-time MIK value is based upon reactions of the human organism in case of short-time exposure. The basic test criteria for it are the determination of the threshold of smelling and brain wave tests. The long-time MIK value is based upon 24-hr testing of resorptive effects of small concentrations of injurious substances on white rats, carried out repeatedly during several months. Many clinical tests are made periodically with children to find and evaluate metabolic changes, composition of urine, and other parameters in relation to local conditions of air pollution. Histological and histochemical examinations of tissue structure, eyes, breathing, and many other tests and their results contribute further to understanding of causal relationships

12643 APTIC NO. 29776

Sugano, Saburo

STANDARDS OF AIR POLLUTION. *(Taiki osen no kijun). Text in Japanese. Preprint, Association of Safety Engineering, Yokohama (Japan), 17p., 1970. (Presented at the Association of Safety Engineering Seminar, 17th, Yokohama, Japan, Feb. 1970.)*

Emission standards for sulfur in eight areas of Japan are shown ranging from 0.020 to 0.045 ppm. A special emission standard for certain parts of Tokyo, Yokohama, Kawasaki, Osaka, Yokkaichi, and Amagasaki, set at 0.089 ppm sulfur. The Bosanquet-Pearson formula and Sutton diffusion equations are explained as well as a method for calculating the effective stack height based on the formulae. The Sutton formula is preferred because it shows about twice the value of the maximum concentration than Bosanquet-Pearson s formula.

The emission standard under Japanese law is derived from the Sutton formula. The wind direction and velocity change constantly so that when they are measured at once spot, the concentration also changes. Therefore, an hourly figure may be far lower than the maximum value. Lowry established the following coefficients: 0.075 (extremely unstable; 0.15 (unstable); 0.25 (slightly unstable); 0.50 (extremely stable). For an emission standard, 0.15 was selected presuming an unstable atmospheric condition. The environmental standards for sulfur oxides were determined on Feb. 17, 1969. It should be (on an hourly basis) less than 0.2 ppm over 99%, less than 0.1 ppm over 88%, and an hourly average less than 0.05 ppm over 70%; the annual average is not to exceed 0.05 ppm. Critical conditions should not last more than 3 days and should not exceed 3% for the total days. The critical time occurs when the hourly concentration of sulfur oxides in the atmosphere is over 0.2 ppm for three hours, over 0.3 ppm for two hours, or over 0.5 ppm for an hour, and when the average for 48 hours exceeds 0.15 ppm.

12644 APTIC NO. 30035

Viland, C. K.

UNLEADED GASOLINE AND SMOG-FREE AUTOS–HOW AND WHY. *Mines Mag. (Denver), 60(8);6-10, Aug. 1970.*

Since 1963, following California s earlier regulations, all new cars sold in the United States were required to have positive crankcase ventilation control. After California imposed limits on, carbon monoxide and on unburned hydrocarbons exhausted, these were made mandatory nationwide. The same situation applied to evaporation control and will apply to emissions of oxides of nitrogen. Emissions standards projected to 1975 are summarized. Temperature inversions and smog are mentioned. Future emission control devices comprise recycling, lower compression ratios, improved exhaust gas reactors, ammonia injection, fuel injection, and catalytic mufflers. Lead additives and the effect of eliminating them are reviewed. The manufacture of high octance lead free gasoline is described. Alkylation plants, catalytic hydrodesulfurization, catalytic reforming, and catalytic hydrocracking are cited. Alternative power sources are mentioned.

LEGAL AND ADMINISTRATIVE

12645 APTIC NO. 28696

Dutch Embassy, Paris (France), Economic Section

CONTINUOUS MEASUREMENT SYSTEM OF ATMOSPHERIC POLLUTION AT THE MOUTH OF THE RHINE, NEAR ROTTERDAM. *(Reseau de mesure en continu de la pollution atmospherique a l'embouchure du Rhin). Text in French. Poll. Atmos. (Paris), 12(48):231-235, Oct.-Dec. 1970.*

Continuous control of air pollution at the mouth of the Rhine -- a particularly polluted zone – is ensured by a system of 31 sulfur dioxide detector pylons, which automatically transmit measurements to a computer in the central monitoring station at Schiedam. If a limit rate is exceeded, or if unfavorable meteorological conditions are recorded, industries responsible for pollution are immediately informed. An illuminating map installed in the central station enables the most dangerously measured sites to be localized. The results obtained are all the more remarkable in that the production of the factories located in the zone had doubled since the warning system was installed. (Author abstract modified)

12646 APTIC NO. 29504

Ministry of International Trade and Industry (Japan), Secretariat

COLLECTION OF LEGISLATIONS RELATED WITH MITI CONCERNING POLLUTIONS. *(Tsusho sangyo kankei horeishu). Text in Japanese. Tokyo, Japan, Tokyo Hoki Publishing Co., May 1971, 270p.*

As of April 1, 1971, the ordinance on the enforcement of the Air Pollution Control Law and the law on the consolidation of the Kinki region (regarding the designation of special areas for the maintenance of the environment) were revised. The ordinance referred to in paragraph 5, Article 2 of the Law designates these substances: ammonia, hydrofluoric acid, hydrogen cyanide, carbon monoxide, formaldehyde, methanol, hydrogen sulfide, phosphoric acid, hydrochloric acid, nitrogen dioxide, acrolein, sulfur dioxide, chlorine, carbon disulfide, benzene, pyridine, phenol, sulfuric acid (including sulfur trioxide), silicon fluoride, phosgene, selenium, dioxide, chlorosulfonic acid, yellow phosphorous, phosphorous trichloride, bromine, nickel carbonyl, phosphorous pentachloride, and mercaptan. The allowable limit for SO2 in the atmosphere is 2/10 mil, an annual hourly maximum, or 0.6/10 ml annual hourly average. When hours exceeding 2/10 mil do not exceed 75 hours a year, only the annual hourly average can be taken. The measurement of the hourly figure is determined by the ordinances of the Ministry of Health and Welfare and the Ministry of International Trade and Welfare. The measurement of sooty smoke and particulates are also in accordance with the law. In the Construction Standards Law Enforcement Regulations, revised December 2, 1970, as Ordinance No. 333, Article 126 stipulates smoke elimination facilities and chimney stacks for buildings. Law No. 144 limits factories in already established urban areas in the Kinki Region.

12647 APTIC NO. 29511

Kawasaki Municipal Office (Japan)

ADDENDUM TO ENVIRONMENTAL POLLUTIONS IN KAWASAKI CITY. *(Kawasakishi no kogai, tsuika shiryo). Text in Japanese. 9p., April 1970.*

The pollution budget for 1970 in Kawasaki city was $238,482 with a supplement of $341,784.80; the total was $580,266.80. The pollution increased to 38 as of October 1, 1970. The amended city ordinance on loans for pollution prevention, City Ordinance No. 47, October 1, 1970, and the Enforcement Regulations of the Ordinance, Kawasaki City Regulation No. 90, October 1, 1970 are given. The maximum loan is $14,000 to be paid back within 10 years. The full text is given of the agreement that the mayor signed on August 14, 1970 with 38 factories (36 companies) concerning the prevention of air pollution, in accordance with Article 17 of the Air Pollution Prevention Law, which provides for pollution alarms. These enterprises will plan air pollution prevention programs in consultation with the city because of sooty smoke (sulfur dioxide and soot, dust, and gas (both harmful and having an obnoxious smell). When an alarm is issued, the industries take the measures described in the plan referred to in Article One. If the situation is not improved, the city may request the enterprises to slow or stop their operations temporarily. When the entrepreneurs install new or greatly change the pollution control facilities, they must confer with the city beforehand, and respect the city s opinion concerning the prevention of air pollution. When there are defects in the air pollution facilities, the entrepreneurs must take immediate steps, and report the situation to the city. Periodical reports on the consumption and sulfur content of the fuel, and other raw materials affecting air pollution must be made by the entrepreneurs. The city can make on site investigations.

12648 **APTIC NO. 29598**

Toyama Prefecture (Japan), Dept. of Environmental Pollution

PRESENT SITUATION OF ADMINISTRATION CONCERNING POLLUTIONS. *(Kogai gyosei no genkyo). Text in Japanese. 74p., Oct. 1970.*

Aluminum smelters and thermal generation stations in the hinterland of Toyama prefecture, have signed an agreement with Toyama Prefecture concerning the prevention of air pollution, but the problem of air pollution is becoming complicated and diversified. Although no concentration is as high as the environmental standard, control was strengthened by amending K 29.2 to 20.4 and adding five observation stations, and a central telemeter monitoring system. Dust collector facilities for electric furnaces lowered the concentration of exhaust smoke from electric furnaces to within the range of standard. With the increase of ferro-alloy, iron, and steel production, on-site checks will be made and guidance will be given on high efficiency dust collecting equipment. With the revision in the sulfur dioxide standard, 56 production facilities, 17% of the factories under control, no longer qualified. At the moment, the chimney height is being raised, a switch to LS heavy oi is being made, and as of the end of March, 1970, about 40% had completed the improvement. Carbon monoxide checks were made in 196 at major locations on traffic congestion in two cities, and they will be continued this year. Since the start of aluminum productio by Sumitomo Chemical Industry, an agreement was signed with the company concerning fluorine. Indicator plants were placed, and on-site checks have been made. Of the 13 staffs on environmental pollution at the prefectural government, four are in charge of air pollution. Of 192 complaints concerning pollution received in 1969 42 were on air pollution. Between September 19, 1969 and October 30, 1969, $583.60 was spent on a survey of air pollution by the prefectural government. As of end of March, 1970, 430 facilities which emit smoke reported in accordance with Air Pollution Prevention Law. Between 1967 and 1969, nine smaller enterprises were given financial aid to improve facilities to prevent air pollution.

12649 **APTIC NO. 29679**

Chiba Prefecture (Japan), Pollutions Countermeasure Bureau

CHIBA PREFECTURAL ORDINANCE ON POLLUTIONS CONTROL AND ENFORCEMENT REGULATION OF ORDINANCE. *(Chiba ken kogai boshi jorei, Chiba ken kogai boshi jorei seko kisoku). Text in Japanese. 58p., March 1970 and Sept. 1970.*

The Chiba Prefectural Ordinance on pollution control consists of 42 articles, divided into general rules, basic measures concerning prevention of pollution, rules on smoke emission, the control of megaphone use, and sundry rules and penalties, with three articles of by-laws. In Article two, the definition of pollution is given as air and water pollution, noise, vibration, depletion of underground water, subsidence (except mixing of ores), and obnoxious odors which cause damage to man's health or living environment (inlcuding property, animals, and plants, and their living environment, which has a close relationship with man). Soot smoke is sulfur dioxide which is emitted with the combustion of fuel, and other dust which is generated by fuel combustion and the use of electricity. The definitions of special facilities, special work and special construction work are given. The governors are required to determine pollution, to carry out research and survey for adopting necessary control measures, and to disseminate the knowledge for pollution control. When the control standard is to be set, changed, or revoked, the governor shall get the opinion of Chiba Prefecture Pollutions Countermeasure Council. Also, he must require those who emit soot and dust, when it harms human health or the living environment, to take necessary steps. He can make them report on necessary items such as the facilities emitting soot and dust, the control method, and the amount. His staff can inspect such factories, books, and facilities. The heaviest penalty for violation is less than one year prison term or less than $280 fine. The corporations, as well as those who were responsible for violating actions, are responsible. In the enforcement regulation, the special facilities are: those where SO is generated and emitted into the atmosphere exceeding 10 cu m/hr in terms O C temperature and 1 atm pressure; those which generate soot and other dust; and those which the governor recognizes to be in danger of generating pollution. The measurement record must be kept for three years. The mayors are responsible for some of the cities control business. Twelve types of facilities are given which emit soot and dust, with the scale and capacity; 9 types which emit harmful gas, dust, and odor are given.

12650 **APTIC NO. 29813**

Chiba Prefecture (Japan)

POLLUTIONS PREVENTION PLAN FOR CHIBA AND ICHIHARA CITIES IN CHIBA PREFECTURE. *(Chibaken Chiba, Ichihara chiiki ni kakawaru kogai boshi keikaku). Text in Japanese. 127p., Nov. 1970.*

On May 27, 1969, the national government gave the Chiba prefectural government a directive to develop a plan for the prevention of pollutions for the Chiba and Ichihara area, based on the Pollutions Countermeasure Fundamental Law, showing the targets, because the area is expected to increase in population and to expand production facilities, with accompanying pollution increase. Consumption of heavy oil at present is 6,676,000 tons a year. Average sulfur dioxide for this area is 0.03 ppm, and out of 19 monitoring spots, 1 spot exceeded the environmental standard in 1969. In 1975, the consumption of heavy oil is expected to reach 27,700,000 tons, and if sulfur content in fuel remains the same, emitted SO2 will reach 160,000 tons. The following steps will be taken: in 1973, 30 enterprises which contribute to the peak pollution, will have a wind tunnel value of less than 0.015 ppm maximum on the ground, and the other enterprises will have less than 0.02 ppm; sulfur content of the fuel used shall be maximum 1.7% and the area average shall be less than 1.3%. In 1973, the total SO2 emission is to be less than 20,000 N cu m/hour; new chimney stacks are to be over 30 m and SO2 is to be collected; SO2 emitted from stacks taller than 70 m is to be 94.1%, to dilute and diffuse. Even at the worst condition with wind coming from the SSW, the complex concentration is to be less than 0.2 ppm. For new production facilities after 1973, the maximum ground concentration and degree of complex pollution are to be less than that of already existing industries. One hundred and twenty-four types of prevention equipment, including electric dust collectors are to be established by enterprises; steel mills are to emit dust of less than one third of the present level; steel mills shall remove mineral ore yard and coal yard to the reclaimed land area, and shall establish water sprinkling facilities. Also, 146 types of equipment, such as scrubbers, and 11 systems are to be installed at sources of obnoxious odors; and chemical plants within steel mills are urged to move to reclaimed areas. Thorough education and training of employees shall be established to prevent mishandling of equipment. Finally, enterprises near residences are to be removed with financial assistance.

LEGAL AND ADMINISTRATIVE

APTIC NO. 29818

12651

Tokyo Metropolitan Government (Japan), Bureau of Sanitation

MATERIALS FOR REFERENCE ABOUT ENVIRONMENTAL POLLUTION CONTROL. *Kogai boken sanko shiryo). Text in Japanese. 39p., March 1971.*

The present state of and the future problems of the administration of environmental pollution control in Tokyo, the injuries to health by these pollutants, and their prevention are discussed. Materials for reference are as follows: the definition of environmental pollution in the basic law of environmental pollution (Kogai); Japanese Air pollution regulations; the history of air pollution in Japan; kinds, physical and chemical characteristics amounts, actions and sources of air pollutants; standards for warnings, and alarms pollutions; influence on the human body; and items in the Tokyo medical examination of community inhabitants for environmental pollution (physical examination of the respiratory organ system). The division of duties in the Pollution Disease Section and the organization of the Bureau of Environmental Protection are also mentioned. Major pollutants discussed include nitric oxide, chlorine, fluorine, carbon dioxide, methane, nitrogen dioxide, ozone, sulfur dioxide, ammonia, sodium chloride, carbon monoxide, iodine, dusts, fumes, mists, hydrogen sulfide, and sulfuric, nitric, hydrofluoric, and hydrochloric acid.

APTIC NO. 29859

12652

POPULATION PLANTS TREES: ENVIRONMENTAL PROTECTION IN JAPAN. *(Bevoelkerung pflanzt Baeume: Umweltschutz in Japan). Text in German. Wasser Luft Betrieb, 15(4):151-152, 1971.*

A central department for coordinating all measures taken in Japan for the protection of the environment was created in 1970. This department reports to the cabinet the prime minister has accepted direct responsibility for combating air, water, and noise pollution. In many sections of the country, the population reacted to these measures positively, and many are determined to participate solving the problem. Thus, for example, 122 streets in the business district of Tokyo with a total length of 14 km are closed to traffic each Sunday. Measurements of the carbon monoxide concentration taken on these days revealed that it had dropped by more than 50% compared to previous Sundays. One hour after the last car had disappeared from the street the carbon monoxide level was 2.3 ppm i.e., one-fifth of the original concentration. In Shinjuku, it sank to zero between 1 and 2 pm. Moreover, the population is planting trees wherever necessary, as an anti-pollution measure.

APTIC NO. 29888

12653

TOKYO FIGHTS POLLUTION. AN URGENT APPEAL FOR REFORM. *Tokyo, Tokyo Metropolitan Government, 1971, 267p.*

The historical background of the emergence of pollution as an environmental problem in Tokyo during and since World War I, which ushered in an era of rapid industrial development, is reviewed. The term kogai was coined to refer to environmental hazards in general; the term, a combination of two characters meaning public and hazard, is a sociological term and does not denote a particular phenomenon. The laws and ordinances on environmental hazards are summarized. Pollution control programs are described, as well as the administration and financing of the government s pollution control policy. Air pollution is classified according to its production mechanisms and sources. Sulfur dioxide, carbon monoxide, photochemical air pollution, and lead pollution are mentioned. Health effects of air pollution are discussed. Water pollution and its control are described, as well as problems due to noise and vibrations. Land subsidence is discussed, and waste disposal is reviewed.

APTIC NO. 29969

12654

FEDERALISM MAKES ENVIRONMENTAL PROTECTION DIFFICULT. *(Foederalismus erschwert Umweltschutz). Text in German. Umwelt (Duesseldorf), 1(1):43-44, 1971.*

Comparative studies of children between ten and eleven years of age in a large city of the Ruhr Valley with those in rural areas revealed retardation of the bone development among the youngsters from the industrially polluted area. A study of the mortality and morbidity rate of circulatory diseases and carcinoma shows that they have increased. Laws and regulations are required since industry cannot be expected to solely take the initiative. Regulations concerning the limitation of air pollution are the task of state governments. In the case of federal laws, execution of the law is the task of the state government; therefore, it is quite possible that industries avoid states with stringent laws for environmental protection and prefer states where the tax income is valued higher than the environment. Furthermore, in rural areas, less protective measures are required because the background concentration which determines the maximum allowable emission is much lower. The federal government, although it realizes the urgent necessity of protecting the environment, can act only in cases where the harmful effect of the toxicant is clearly established as is the case with lead.

APTIC NO. 29975

12655

Smaller Enterprises Promotion Corp. (Japan)

CASTING WORK ENVIRONMENTS AND PUBLIC NUISANCE. *(Chuzo sagyo kankyo oyobi kogai). Text in Japanese. In: Report of Field Survey on Technical Standards of Smaller Enterprises. Pig Iron Castings Manufacturing Industry (70-70) Chapt. Rept. 419, p. 57-69, March 1971.*

The shortage of labor, caused by generally poor working conditions, is an increasingly serious problem for the casting industry. A survey revealed that 100% of the enterprises in the pig iron casting industry admitted the need to make working environment improvements. Changes should include: the development of work procedures, machines, tools, and equipment that will not damage the working environment; the improvement of ventilation, lighting, and air conditioning to eliminate dust, heat, noise, and odor; and the development of high-performance, low-cost devices to improve the working environment. According to the opinion survey, 774 out of 1762 companies wanted something done about dust, 386 about heat, 364 about noise, 129 about vibration, 82 about odor, and 27 about other items. Dust is produced by sand screening, demolition of molds, grinding, and melting in a cupola furnace. Heat occurs in teeming, especially hand-teeming, melting in a cupola, and demolition of molds. Noise comes from compressors, melting, molding machines, and grinding. Vibration comes from molding machines, grinders, cupola furnaces, and others, while odor is from mold-making, especially shell mold-making, carbon dioxide, melting in a cupola, and demolition of molds. Dust, noise, vibration, exhaust gas, odor, and effluents from the casting industry also cause a public nuisance. Since most casting works are smaller enterprises and located in densely populated districts, the solution of the public nuisance problem is very difficult, particularly for economical reasons. It can only be solved through the cooperation of central and local governments, enterprises, and local inhabitants. The most popular public nuisance prevention devices in the industry are dust removers and sound insulation devices, followed by the suspension of night-time operations. Now 75.4% of the enterprises operate during daytime only.

12656 APTIC NO. 30052

Council of Europe, Committee of Experts on Air Pollution

COMPARATIVE STUDY OF CERTAIN PROVISIONS IN MEMBER STATES FOR CONTROLLING AIR POLLUTION. *146p., Jan. 1971.*

A questionnaire was sent to various European countries (Austria, Belgium Italy, Netherlands, Norway, Sweden, Greece, France, Ireland, Germany, Malta, Great Britain, and Turkey) to survey the legislation on air pollution control. Items covered licensing, inspection, emission limits, special protection criteria, smog warning criteria, and control agencies and specialists. The replies also included various sources, sulfur dioxide limits, specific legislation, motor vehicle emission controls, planning and zoning, enforcement procedures, chimney heights, types of fuel used, and particulate emission limits.

12657 APTIC NO. 30056

Cohen, A. S., E. J. Croke, A. Hurter, J. E. Norco, and J. J. Roberts

LONG RANGE PLANNING IN AIR RESOURCE MANAGEMENT. *Argonne National Lab., Ill., Center for Environmental Studies; Chicago Dept. of Air Pollution Control, Ill.; Argonne National Lab., Ill., Applied Programming Group; Argonne National Lab., Ill., Meteorology Group, AEC Contract W-31-109-Eng-38, 137p., Jan. 1971. 21 refs.*

NTIS: ANL/ES-CC-008

The Chicago Air Pollution Systems Analysis Program first went through a long-range planning phase. Air resource management was an integral part of the land-use planning; emission-density regulations defined a maximum emission rate per land area unit for each land-use classification, that is lb/sq m-hr. Also, the land- use plans were reflected in local zoning ordinances. A systematic statistical procedure for conducting a zoning survey is presented, as well as the results of a zoning survey conducted for the Chicago Metropolitan Air Quality Control Region. A model for projecting and displaying future air-pollution levels was formulated. This computerized package included projection, climatology, and dispersion models. Annual and seasonal projections of sulfur dioxide levels in Chicago were made for the year 1980, assuming a 1.5% limit of sulfur is imposed for all fuels used in Chicago. A computerized methodology for 12-to-24-hr advance predictions of ambient SO2 concentrations was developed for coal and oil combustion in residential, commercial, and industrial sources and power plants. Social, economic, and administrative factors in the development of pollution control programs are discussed. (Author abstract modified)

12658 APTIC NO. 29474

Diamant, R. M. E.

THE PREVENTION OF POLLUTION. PART II-POLLUTION AND THE LAW. *Heating Ventilating Engr., J. Air Conditioning (London) 44(524): 443-450, March 1971. 15 refs.*

The main acts which affect air pollution in Great Britain are the Clean Air Acts of 1956, supplemented in 1968. Section 1 of the Clean Air Acts deals with dark smoke, and the basis of this is the Ringelmann Chart No. 2. Sections 6-9 require new furnaces above a capacity of 1 ton/h of fuel, and all pulverized fuel furnaces to be fitted with grit and dust extractors. The most important aspect of the Clean Air Acts is the power which is given to local authorities to establish smoke control areas. Provisions of the 1906 Alkali Act, which has been extended and amended every few years, deal with the escape of noxious and offensive gases into the atmosphere. At the present time no less than 56 types of works have been scheduled under these acts, and they include about 3000 different processes. A description is given as to how these acts are applied specifically to sulfuric acid manufacture, nitric acid, ferric chloride and picric acid manufacture, the manufacture of hydrochloric acid, steel works and lead works. The Ministry of Housing and Local Government issued a memorandum in 1956 on chimney heights to be applied by local authorities as a basis for implementing the clean air acts. Legislation and standards which pertain to water pollution are also indicated, with reference to drinking water, water for industrial purposes, water for cooling purposes, and water for spray irrigation. Sewage treatment and the disposal of waste effluents to the sea via rivers are reviewed. Also of importance in this connection is the Public Health Act of 1936, which makes it a criminal act ot put a number of materials into any public sewer. The most important act relating to refuse is the 1936 Public Health Act which classifies refuse into house refuse, trade refuse, and other refuse, such as garden and agricultural waste. Laws on pollution in the United States and continental Europe are also mentioned.

12659 APTIC NO. 30040

Halter, S. and J. Lafontaine

LEGAL ASPECTS OF AIR POLLUTION IN BELGIUM AND OTHER NEIGHBORING COUNTRIES. *(Aspects legaux de la pollution de l air en Belgique et dans les pays voisins). Text in French. World Meteorol. Organ. Tech. Note, no. 108:263-271, 1970.*

The various air pollution regulations of different countries adopt one of two attitudes: the air must be pure; the air must be as clean as possible. Although governmental authorities are given the power to detect pollution or take preventive measures, they generally consider social and economic imperatives, relative priorities for different nuisances, money, material, and personnel, which weakens the regulations. Standards vary from country to country, and sometimes exact standards are not fixed. Certain climatic and meteorological conditions could increase the risks from pollution and cause several measures to be imposed including the stoppage of automobile traffic, the use of combustibles, and the use of other pollutants. American controls and alarms are discussed. Other countries have regulations to train experts, develop surveillance networks, coordinate operation control, create a board of experts, develop experimental research in the field improve air pollution knowledge and methods of detection and measurement, and undertake new epidemiological studies. Belgium, French, and German regulations are discussed in detail.

12660 APTIC NO. 29507

Ihara, Masami

NEW TREND IN POLLUTIONS COUNTERMEASURES IN THE 70 S. *(70 nendai no kogai taisaku no shinkeiko). Text in Japanese. Keizai Kikaku (Econ. Planning), no. 67:29-39, March 1971.*

In the 70s, environmental pollution is controlled by overall measures, rather than individual measures. The national industrial structure, population structure, economic growth and global points of view must be considered. In Japan, the Pollutions Dispute Disposal Law was established in June, 1970. At the end of July, 1970, a Central Pollutions Countermeasures Headquarters was established in the cabinet, to give directions to ministries and to coordinate the activities of ministries. On November first, the Central Pollutions Examination Committee was established to mediate pollution disputes. Various advisory committees gave their reports on pollution, and the Industrial Structure Council reported on pollution control expenses. Based on these reports and the ministry examinations, 14 bills concerning pollution were presented at the 64th Extraordinary Diet session, including the Pollutions Countermeasures Basic Law and the Air Pollution Control Law. For fiscal 1971, the budget on pollution control was $26,068,000 which is 39.7% increase over the previous year. Taxes on low sulfur-heavy oil was reduced. Environmental standards on floating particulates, nitric oxide and other pollutants is presently being examined at related councils. According to the report of Study of Critical Environmental Problems, carbon dioxide is generated by fossil fuel combustion, half is absorbed by seas and forests, half remains in the atmosphere, and the amount increases two % every year. By 2000, CO2 in the atmosphere will increase to 28%, raising the temperature of the surface of the ground by 0.5 C. If CO2 in the atmosphere is increased twice, the average temperature of the ground surface will be 2 C higher, which will have unpredictable effects in the long run. Therefore necessary data must be collected about CO2 circulation in the atmosphere, sea, and biological sphere. Particulates amount has increased in Europe, North America, North Atlantic, but not in the middle Atlantic. It is not yet known whether the existence of particulates in the atmosphere would increase or decrease the temperature on the ground surface. Particulate causes, movement, amount in the troposphere and stratosphere, and effect on clouds should be studied.

12661 APTIC NO. 29845

Jamieson, J. K.

THE ROLE OF INDUSTRY--AIR QUALITY. *J. Air Pollution Control Assoc., 21(2):62-64, Feb. 1971.*

It is in the area of standards that industry can play an important role in the air-pollution effort. Many companies have been evaluating the effect of their operations on air quality, and industrial scientists have gathered a great deal of information about the behavior of pollutants. These men can suggest alternate methods of removing them from the air and give accurate estimates of the cost of each control method. Industry is therefore in a sound position to assume an advisory role in helping government on all levels to establish precise, enforceable, and attainable air standards.

12662 APTIC NO. 29491

Katz, Morris

INTERSOCIETY COMMITTEE METHODS FOR AMBIENT AIR SAMPLING AND ANALYSIS. PREFACE. *Health Lab. Sci., 8(2):99-100, April 1971.*

The Intersociety Committee for a Manual of Methods for Ambient Air Sampling and Analysis was organized in March 1963, and this is the sixth published collection of methods adopted as tentative. Participating organizations and coordination between the Intersociety Committee and the Air Pollution Control Office are mentioned. Hopefully, the project will provide a sound basis for improving methodology over a period of years.

12663 APTIC NO. 29555

Laemmert, A.

COMMISSION FOR INDUSTRIAL DUST PROBLEMS IN GERMANY. *(La commission des poussieres industrielles en Allemagne). Text in French. Lab. Central des Services Chimiques de L Etat, Paris (France) and Inst. National de Securite pour la Prevention des Accidents du Travail et des Maladies Professionnelles, Paris (France), Colloq. Securite Sociale Serv. Prevent., 3rd, Paris, France, 1955, p. 70. (Nov. 3-5.)*

A committee formed in Germany and composed of technical specialists and representatives of various industries will decide on the basic techniques for effectively combatting industrial dust. A group is to be formed which will concentrate on coordinating efforts to find economical methods of air purification. Four subcommittees are envisaged, for emission of dust and gases, inhalation and absorption of dust and gases, biological effects of dust and gases, and a general technical committee. The organization will work toward the publication of a manual on air purification. Pressure for legislation will not be applied until a solid base for regulations is established.

12664 APTIC NO. 29828

Legner, Miroslav

STATE AND INSPECTION OF PROTECTION OF ATMOSPHERE AND LEGAL REGULATIONS VALID TODAY. *(Stav a kontrola ochrany ovzdusi). Text in Czech. Stavivo, 49(2):42-45, 1971.*

The most important legal standards for atmospheric cleanliness are discussed for industrially well developed European countries. Special attention is directed to organization, competency, and work methods of supervisory authorities. Available foreign sources and consultations with foreign specialists were used to gain information. Great Britain, West Germany, Switzerland, Soviet Union, France, and Poland are the countries discussed.

12665 APTIC NO. 29594

Loranski, D. N.

THE TASKS OF THE PUBLIC HYGIENE SYSTEM OF THE USSR IN THE FIELD OF THE PURIFICATION OF THE AIR. *(Aufgaben des Hygienewesens der UdSSR auf dem Gebiet der Luftreinhaltung). Text in German. Wiss. Z. Humboldt Univ. Berlin Math. Naturw. Reihe, 19(5):549-551, 1970.*

In 1949 nationwide action was started in the USSR in a systematic effort to control the increasing air pollution, and plans were developed for improving the sanitary and hygienic conditions in residential areas and for protecting the natural environment. When in 1965 the next five-year plan was developed, it outlined, in parallel with the planned industrial projects, the plans for disease prevention, improved living conditions, and increased hygienic requirements. Since then, the network of state institutes for hygiene has been greatly increased. The activities of these institutes are summarized as follows. (1) Air quality measurements in towns and industrial areas. This includes sampling several times a day in established locations, sample analysis, and simultaneous measurement of technological data. (2) Studies of the unfavorable effects of industrial wastes on the public health. This work is carried out parallel with a study of the number and types of acute illnesses and of the living conditions of the population in the area being investigated. (3) Establishment of maximum permissible concentrations (maximum emission concentration, or MIK-values) of pollutants in inhabited areas. In 1961 a total of 34 MIK values was already in existence; 267 additional ones were established by 1970. (4) Cooperation in residential planning. (5) Preparation and submittal to the appropriate government departments of suggested control measures. (6) Study of improved production methods.

12666 APTIC NO. 29485

Lund, Herbert F.

A PHILOSOPHY OF INDUSTRIAL AIR POLLUTION CONTROL. *J. Eng. Ind., 93(2):379-383, May 1971. (Presented at the American Society of Mechanical Engineers, Winter Annual Meeting, New York, Nov. 29-Dec. 3, 1970, Paper 70-WA/Mgt-11.)*

A brief review of historical facts pertaining to air pollution is presented, as well as an analysis of present conditions around the world. Industry s responsibility is considered, while legislative procedures and their enforcement effectiveness are compared. The impact of air pollution control costs on worldwide markets is included, and suggestions for solutions are offered. Europe s legislative enforcement of industrial air pollution is characterize as diplomatic persuasion. In Great Britain, the Alkali Inspectors Office has relied not on legal sanctions but on education and persuasion to insure compliance. Another factor that has helped develop a work-together approach in Europe is the government-type application research facility. At the Warren Springs Air Pollution Control Laboratory at Stevenage, England, the government will fund a research program to solve an industrial air pollution problem if the solution will benefit a broad cross section of industry.

12667 APTIC NO. 29592

Morik, Josef and Zsigmond Biro

THE TASKS OF THE PUBLIC HEALTH SYSTEM IN THE FIELD OF THE HYGIENE OF THE AIR IN THE PEOPLE S REPUBLIC OF HUNGARY. *(Die Aufgaben der Hygieneinspektionen der VR Ungarn auf dem Gebiet der Lufthygiene). Text in German. Wiss. Z. Humboldt Univ. Berlin Math. Naturw. Reihe, 19(5):557-558, 1970.*

The Ministry of Health in Hungary is responsible for directing activities in the area of hygiene of the air as administered by district inspectorates, which have the following tasks: (1) determination of maximum permissible concentrations of pollutants in residential areas, largely in agreement with those adopted by the USSR and recognized by the World Health Organization; (2) systematic study of the degree of prevailing air pollution in inhabited areas; (3) study of conditions in industrial areas; and (4) recommending measures to reduce air pollution. Based on extensive work and the use of uniform methods on a nationwide scale, a clear picture of the most important problems was obtained. In addition, a number of characteristic relationship between air pollution and meteorological conditions were established. A table of maximum permissible one-time concentration and maximum permissible daily average concentrations of 16 pollutants, in mg/cu m is included. For ammonia, for example, the values are 1.5 mg/cu m maximum, 0.5 daily average; nitric oxides, 0.5 maximum, 0.15 average; carbon monoxide 6.0 maximum, 2.0 average.

12668 APTIC NO. 29817

Nelson, Norton

SOME RECENT TOPICS IN AIR POLLUTION AND HEALTH IN NEW YORK. *Taiki Osen Kenkyu (J. Japan Soc. Air Pollution), 4(3):215-222, Oct. 1970. (Presented at the Japan Society of Air Pollution, Annual Meeting, 10th, Tokyo, 1969.)*

Auto exhaust constitutes a major source of air pollution in New York City; another is incineration or burning of solid wastes. The mayor s advisory council on science and technology has recommended that the city begin the construction of large-scale incinerator units with very rigid emission control which will also use the heat thus generated to produce steam. Because electric power production is such a large source of sulfur oxide emissions, a regulation passed in 1966 prohibited the use of fuels containing more than 1% sulfur by 1969. The new patterns and standards that are emerging as a result of Federal regulations are mentioned, including the designation of air quality regions. Air pollution episodes in New York City and related morbidity and mortality data are described.

12669 APTIC NO. 29469

Niesler, R. A.

INDUSTRIAL EMISSIONS: AN ANALYSIS OF SOME KEY FACTORS. *J. Inst. Petrol., 56(552):341-350, Nov. 1970. 6 refs.*

Some general physical factors of importance for air conservation are discussed, and the presently available figures on worldwide emissions are cited. A diagram is included showing how the electromagnetic rays of the sun penetrate the earth s atmosphere and what varied effects they can have. Altitudes, atmospheric temperatures, and the effect of carbon dioxide concentrations are discussed. Global emission currents, their sources and sinks, are reviewed for carbon dioxide and nitrogen compounds, carbon monoxide, sulfur compounds, and hydrocarbons. Sulfur and nitrogen compounds are seen as important and general problems of industry, while hydrocarbon and carbon monoxide emissions are the problem of the automotive manufacturers and city traffic authorities. Some focal points of industrial air conservation in West Germany are discussed, as well as the oil industry and air conservation legislation in Europe and West Germany. Regulations and general administrative directions for industrial plants are included.

12670 APTIC NO. 29509

Nishikawa, Tatsuzo and Hajime Ushijima

ON THE BASIC LAW FOR ENVIRONMENTAL POLLUTION CONTROL, NOISE CONTROL LAW, WATER POLLUTION PREVENTION LAW, AND AIR POLLUTION PREVENTION LAW. *(Kogai taisaku kihonho, soon kiseiho, suishitsuosen boshiho, taikiosen boshiho). Text in Japanese. Doboku Gakkaishi (J. Japan Soc. Civil Engrs.), 56(4):77-86, April, 1971. 8 refs.*

The Basic law for Environmental Pollution Control was amended late last year to expand the scope of application to combat the increasingly diversified environmental pollution. Notable changes in the amendment included the deletion of the in harmony with economical development clause, and the inclusion of soil contamination, and the deterioration of the sea, river bottoms, and water quality resulting from change in water temperature. The first chapter describes General Provisions stipulating the purpose, definition, responsibility of the enterprise, responsibility of the State, responsibility of local public bodies, responsibility of the inhabitants, and annual reports. The second chapter stipulates Fundamental Policies for the Prevention of Environmental Pollutions which sets forth the ambient quality standards. The third chapter deals with Sharing of Cost and Financial Measures, while the fourth provides for the Environmental Pollution Control Council and the Central Advisory Commission for Environmental Pollution Control. Provisions of those articles having direct relations to civil engineers were specially taken up for review and interpretation. The Noise Control Law, Water Pollution Prevention Law, and Air Pollution Control Law are implementational regulations of the Basic Law and stipulate in detail the criteria to be observed and the measures to be taken. The Air Pollution Prevention Law promulgated in 1968 is the successor to the Soot and Smoke Control Law enforced in 1962. It now applies not only to those factories and enterprises generating soot, smoke, and dust, but also to automobiles emitting exhaust gas. Two kinds of the emission criteria are set forth, one for the uniform nationwide application and the other for the specially designated areas. It also authorizes prefectural governors to issue correction orders. If the orders recipient fails to observe the order, he may now be punished in accordance with the penalty provisions of the Law.

12671 APTIC NO. 29495

Sawae, Tadao

EXPANSION AND STRENGTHENING OF AIR POLLUTION CONTROL COUNTERMEASURES. *(Taiki osen boshi-taisaku no kakuji kyoka). Text in Japanese. Toki no Horei (Current Laws Ordinances), no. 744:1-9, March 23, 1971.*

At the 64th Extraordinary Diet session, 14 bills on pollution were passed, which included a partial amendment to the Air Pollution Control Law. The amendment was promulgated as Law No. 134 December 25, 1970. The Air Pollution Control Law was established as an overall law for the control of air pollution. Control areas were designated as to sooty smoke, sulfur oxides, soot, other particulates and for each designated area, an emission standard was set. Exhaust gas from automobiles is controlled by establishing an allowable limit. Control of sulfur oxides are by 8 increasingly stricter standards. More stringent standards for the new and increased facilities which emit sooty smoke were set in Tokyo and Osaka. In some areas, the effects of the law are apparent. However, more industrial development, population explosion of the urban areas, and increased transportation are causing newer types of pollution. As of March 1969, of 172 monitoring places for sulfur oxides, 37% exceeded the standard. Pollution recently expanded from city centers to the peripheral areas. Smaller particulate dust is on the increase in Tokyo and higher concentrations of lead, manganese, and cadmium were detected in special areas. Also pollution by cement particulates and iron dust occurred. The new amendment took these tendencies into consideration, and the clause maintenance of living environment would be in keeping with the healthy development of industry was deleted. The areas and the range of matters to be controlled would be expanded all over Japan, depending upon the actual conditions in the area. Emission standards can be established, measures against the violation of emission standards will be made more severe, fuel control will be introduced, measures taken during emergency will be strengthened, the method of handling electric and gas works will be improved, and coordination with other laws and regulations will be established.

12672 APTIC NO. 30020

Starke, E. W.

THE EVOLUTION OF AIR POLLUTION CONTROL LAWS. *Am. Paint J., 55(51):47, 50, 52, 54-55, 58, 60, 62-67, June 7, 1971.*

Federal air pollution legislation came about through the inconsistency of local air pollution control regulations and the general lack of their effective enforcement. In 1955, Congress enacted Public Law 84-159, which authorized a federal program of research and of technical assistance to the states. It also set the theme for state implementation of pollution enforcement activities. This legislation was amended and strengthened in 1963 (the Clean Air Act), in 1965 (Public Law 89-272), and again in 1966 (Public Law 89-675). Meanwhile, additional scientific information became available linking various air pollutants with adverse health effects. Enactment of Public Law 90-148, the Air Quality Act of 1967, represented the second major change in abatement laws. This act, which emphasizes protection of human health rather than protection of property rights and which requires the states to take effective action, is now the foundation of the nation s clean air program. Other aspects of abatement discussed include cooperative activities, research and training programs, grants, motor vehicle emission standards, and implementation procedures. Contaminants which the Department of Health, Education and Welfare considers to be pollutants are listed; criteria documents are mentioned. Timetables for the development of standards are presented for sulfur oxides, particulate matter, carbon monoxide, hydrocarbons, and oxidants. Population shifts, the Donora incident, and the evolution of air pollution control laws are reviewed.

SOCIAL ASPECTS

12673 APTIC NO. 30138

Goldsmith, John R.

AIR POLLUTION EPIDEMIOLOGY: A WICKED PROBLEM, AN INFORMATIONAL MAZE, AND A PROFESSIONAL RESPONSIBILITY. *Arch. Environ. Health, 18(4):516-522, April 1969. (Presented at the American Medical Association, Air Pollution Medical Conference, 9th, Denver, Colo., July 22, 1968.)*

Attempts to deal with the air pollution problem have been characterized by the proliferation of meaningless efforts in the measurement of pollutants whose levels lead to no consequence, the conduct of medical research whose interpretation advances neither science nor the control of air pollution, and the organization of agencies or bureaus incapable of serious action. Very few efforts at control are intensively followed to determine their relative effectiveness in terms of health and causally related changes in air quality. An epidemiologic approach is suggested for the study of air quality-health interactions. The approach is based on a temporospatial, or two-dimensional, strategy in which a comparison is made of the time course of some health-related event in different locations; both of which have the same general weather pattern, but one of which has a higher pollution level. Also necessary are valid estimates of population exposure, an understanding of the distinction between clinical and laboratory research and epidemiologic studies of the same phenomena, a sufficiently large sampling population, and proper selection of variables. In additon, the epidemiologist needs the assistance of a skilled mathematical statistician.

12674 APTIC NO. 29619

Rosen, Walter G.

THE ENVIRONMENTAL CRISIS: THROUGH A GLASS DARKLY. *BioScience, 20(22):1209-1211, 1216, Nov. 15, 1970. 9 refs.*

It is suggested that we are in urgent need of worldwide zero population growth or in some places of a negative population growth, of zero economic growth, and of a negative system of technological development, which means a redefinition of our concept of what constitutes a desirable standard, or style, of living. Not only in college, but at every level from kindergarten through graduate school, relevant science should be taught, ecological awareness, and the responsible kinds of behavior which follow therefrom.

12675 APTIC NO. 29722

Sporn, Philip

OUR ENVIRONMENT--OPTIONS ON THE WAY INTO THE FUTURE. *IEEE (Inst. Elect. Electron. Engrs.) Spectrum, 8(5):49-58, May 1971. 10 refs.*

The electric power industry faces a dilemma, the need to supply ever-increasing quantities of electric energy and power vital to mankind and, at the same time, to control pollution of the environment to viable limits. Contaminant characteristics of the various fuels entering into electric energy generation are cited, with reference to particulate matter, carbon dioxide and sulfur dioxide emissions, and thermal pollution from nuclear fuel. In addition, transmission lines are a physical infringement on the landscape. Costs and economic considerations which pertain to cleaning up the environment are indicated, as well as the basic choices for the development of a program of compatibility between energy use and a protected environment. Stabilization of the population is at the head of the program.

GENERAL

12676 APTIC NO. 29591

Boer, Wolfgang

ON SOME BASIC PROBLEMS OF THE PURIFICATION OF THE AIR. *(Zu einigen Grundfragen der Reinhaltung der Luft). Text in German. Wiss. Z. Humboldt Univ. Berlin Math. Naturw. Reihe, 19(5):507-508, 1970.*

Clean air is an absolute prerequisite for maintaining health, for the improvement of living and working conditions, and for the unhampered development of the national economy. On the other hand, the growth in industrial production in most countries of the world and the increase in traffic and in combustion for heat generation have steadily increased the emission of pollutants into the air. While in the U. S. automobile exhaust emissions represent the leading group of pollutants, sulfur dioxide, dust, and soot are the most widespread polluting substances in several other countries. The laws of the German Democratic Republic include regulations whic make it mandatory for government agencies and all citizens to keep the air clean for the protection of natural resources. The medical and public health sectors must establish limits of permissible concentration of pollutants in the human environment, in terms of polluting substance, time, space, and population. Methods must be developed to prevent emission of pollutants into the atmosphere, either by eliminating the generation of such pollutants or where this is not possible, by purification of waste gases. A third important area is enactment of economic and legal regulations to ensure that, based on planned location of potential sources of pollution, production methods with a minimum emission of pollutants into the atmosphere are actually applied and constantly improved. One of the tasks in agriculture and forestry will be select and further develop varieties which remain usable despite exposure to pollutants.

12677 APTIC NO. 29459

Boltz, C. L.

NOBODY BREATHES FRESH AIR. FACTS AND ARGUMENTS ABOUT AIR POLLUTION. *Rev. Phys. Technol., 1(2):130-142, Summer 1970.*

Both natural and man-made pollution effects the Earth. It cannot be completely eliminated but can be controlled so it causes only minimum interference with natural flora and fauna and damage to materials and structures. The most widespread pollutants are sulfur dioxide, smoke, grit, and dust. Conflicting evidence and difference of opinion make effects of pollution on human health ambiguous. Since the human body is very adaptable and multivariate, statistical evidence is difficult to obtain. Sulfur dioxide and carbon monoxide have been proven to be toxic. Many regulations have been established in Britain, such as the Alkali Acts. Today s wide concern may be attributed to the increasing population, urbanization, and sources of pollution, organizations to prevent pollution, the influence of mass media, and the death of 4000 people in the London smog of 1952. The last-mentioned had immediate effect in enacting regulations. Also, estimates of British pollution must be taken in relation to the mass of the atmosphere and the widespread diffusion. The world situation is little different from that in Britain. Sulfur dioxide is the only important pollutant that is entirely man-made. Pollution varies regionally and also is gradually removed by nature. Pollution costs roughly 10,000 million dollars per annum. Research is being done on the detection, measurement, and statistical recording of each pollutant; the reduction of pollution before and after emission; and all airborne materials and their mixing and interaction. Measurements of dust, grit, flue gas, smoke, SO2, CO automotive emissions, and other pollutants are discussed, as well as specific techniques such as dust collectors, cyclone probes, dust monitors, an optical density meter for smoke, stack height, automatic monitoring, and SO2 and particulate synergism. The decrease in pollution since 1938 is probably due to natural changes in social customs rather than legislation.

12678 APTIC NO. 29961

Hogetsu, Kinji

ENVIRONMENT PRESERVATION - FROM THE ECOLOGICAL POINT OF VIEW. *(Kankyo hozen ekoroji no tachiba kara). Text in Japanese. Preprint, Japan Society for High Polymers, Tokyo, 3p., 1971. (Presented at the Symposium on High Polymer Disintegration, 2nd, Tokyo, Japan, April 14-16, 1971, Paper 3.)*

The environment is classified into inorganic, including meteorological and pedological factors, and organic. Physical, chemical and biological measurement of the environment is described. The mass and energy transfer among the four elements of the eco system, namely, the inorganic environment, the producer, the consumer and the disintegrator, is shown and the cycling of carbon among the atmosphere, plants, animals, fish, plankton, deposits, coals, and petroleum is diagrammed. Population, food, solar energy, and efficiency of photosynthesis are used to estimate the future coexistence of human beings and the environment. The nitrogen cycle among the atmosphere, plants, animals, deposits, and earth core is also described. Mankind is disrupting nature by consuming oxygen, polluting water resources, increasing carbon and sulfur dioxides, polluting air with dusts, and by producing agricultural chemicals and high polymers. The importance of recycling in the ecosystem is emphasized. The effects of the environment on the mental and psychological aspects of human beings are also explained. The four guidelines in environmental preservation emphasized are promotion of basic studies, prevention of unnecessary reformation of nature, critical reassessment of conventional means of waste disposal, and overall planning.

12679 APTIC NO. 29593

Horn, Karlwilhelm

INTERNATIONAL SYMPOSIUM ON THE HYGIENE OF THE AIR OF THE MEMBER COUNTRIES OF THE COUNCIL FOR MUTUAL ECONOMIC AID. *(Internationales Lufthygiene-Symposium der RGW-Laender). Text in German. Wiss. Z. Humboldt Univ. Berlin Math. Naturw. Reihe, 19(5):449-450, 1970. 2 refs.*

One of the co-ordinated research projects of the Council for Mutual Economic Aid is the protection of the atmosphere from injurious substances. At present, scientists in six member countries (Bulgaria, Czechoslovakia, Eastern Germany, Poland, Rumania, and the Soviet Union) are engaged in a study of the subject Hygiene of the Air, which is devoted to medical aspects of air purification. Studies included are the establishement of air-hygienic standard values, air-hygienic methods of testing, investigations of the effect of air pollution on the environment and on the living and health conditions of the population, air pollution by automobile exhaust, carcinogenic air pollution, and the effect of the pollution of air, water, and food on the human organism.

12680 APTIC NO. 29743

Saruta, Katsumi

CHANGE IN POLLUTANTS AND FUTURE PROBLEMS. *(Osenshitsu no suii to kongo no mondai). Text in Japanese. Preprint, Association of Safety Engineering, Yokohama (Japan), 29p., 1970. 8 refs. (Presented at the Association of Safety Engineering Seminar, 17th, Yokohama, Japan, Feb. 1970.)*

Although the smog of 1962 in London caused fewer deaths than in 1952 when 4000 died, the concentration of sulfuric acid gas remained at the same level or higher, with decreased suspended solids, which indicates that the domestic consumption of coal had decreased, but not industrial consumption, while consumption of oil increased. The same trend is observed in Japan. The amount of dust decreased in Yokohama and tar is steadily decreasing. Carbon is increasing even in non-industrial areas, indicating that urban activities are very brisk and pollution due to the development of the hinterland is spreading widely. The lead peroxide method in wide use in Japan for measuring sulfur oxides. In 1967, Yokohama, in comparison with 1960, showed an increase in sulfur about 2.5 times in the industrial area and about 2 times an increase in the semi-industrial area. Measurements in 1966 and 1967 showed that annual average hourly levels exceeding 0.1 ppm occurred in Osaka, Kawasaki, Yokkaichi, and Muroran. There are 17 cities and 45 sites measuring over 0.5 ppm sulfur, oxides, requiring urgent measures in accordance with Air Pollution Control Law. Although fuel consumption by smaller enterprises is relatively small, it is significant as a cause of local pollution. Since density of coastal industrial development is increasing, determination of the right size and placement of factories is important. Desulfurization of heavy oil and the use light sulfur heavy oil and of natural gas involve problems of transportation and high cost. The size of particulates and heavy metals contained in them must be studied, as well as the layout of chimney stacks, their height and geographical aspects, and meteorological conditions. Even if large-scale enterprises cooperate in cases of heavy pollution, the problems of regional control measures and forecasting remain. In cases of damages to citizen s health, the national government, local autonomous bodies, and private enterprises, are expected to take steps for their relief.

12681 APTIC NO. 28923

Stern, Arthur C. and Leonard Greenburg

AIR POLLUTION--THE STATUS TODAY. *Am. J. Public Health, 41(1): 27-37, Jan. 1951. 21 refs. (Presented at the American Public Health Association, 78th Annual Meeting, St. Louis, Mo., Nov. 2, 1950.)*

An increase of attention to air pollution as a nationwide problem was initiated by the emergence in 1945 of Los Angeles smog as a local problem of the first magnituude. By the fall of 1948, Southern California was the center of university, private, and public research in air pollution and the California public had become air pollution conscious. The Donora smog episode aroused the hitherto complacent East at about the same time. Defense research projects and the significance of recent symposia are mentioned. Damage to vegetation by sulfur dioxide, fluoride damage to livestock, other effects on vegetation, and eye irritation in Los Angeles are discussed. The results of the Public Health Service investigation following the Donora episode are summarized. Air pollution standards are cited, as well as meteorological investigations, jet dilution of stack effluents, dilution by turbulent mixing, dust dispersion and prediction of smog, air sampling and analysis, new tools for sampling, scrubbers, adsorbers, and dust collectors, governmental regulations, Los Angeles control district rules, and smoke abatement.

SUBJECT INDEX

A

ABATEMENT

CLOSE SCRUTINY OF AUTOMOBILE EXHAUST GASES. TECHNICAL INSPECTION SERVICE FOR AUTOMOBILES IN NEW PREMISES.
12005 APTIC NO. 30002

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

POLLUTION CONTROL AT THE SAGAMIHARA PLANT OF OUR TOKYO MACHINERY WORKS.
12199 APTIC NO. 29821

PLANTS AND POLLUTED AIR.
12230 APTIC NO. 30083

SOURCE SAMPLING OF ATMOSPHERIC CONTAMINANTS.
12248 APTIC NO. 30118

CLEANER AIR IN LONDON.
12377 APTIC NO. 29912

POLLUTIONS AND TOKYO METROPOLITAN GOVERNMENT.
12365 APTIC NO. 29973

PROBLEMS OF AIR POLLUTION AND MEASURES TO COMBAT IT IN EL PASO, TEXAS.
12368 APTIC NO. 30094

FAST WRITE-OFF AND OTHER TAX RELIEF.
12627 APTIC NO. 30128

A PHILOSOPHY OF INDUSTRIAL AIR POLLUTION CONTROL.
12666 APTIC NO. 29485

EXPANSION AND STRENGTHENING OF AIR POLLUTION CONTROL COUNTERMEASURES.
12671 APTIC NO. 29495

COLLECTION OF LEGISLATIONS RELATED WITH MITI CONCERNING POLLUTIONS.
12646 APTIC NO. 29504

NEW TREND IN POLLUTIONS COUNTERMEASURES IN THE 70 S.
12660 APTIC NO. 29507

ON THE BASIC LAW FOR ENVIRONMENTAL POLLUTION CONTROL, NOISE CONTROL LAW, WATER POLLUTION PREVENTION LAW, AND AIR POLLUTION PREVENTION LAW.
12670 APTIC NO. 29509

ADDENDUM TO ENVIRONMENTAL POLLUTIONS IN KAWASAKI CITY.
12647 APTIC NO. 29511

PRESENT SITUATION OF ADMINISTRATION CONCERNING POLLUTIONS.
12648 APTIC NO. 29598

CHIBA PREFECTURAL ORDINANCE ON POLLUTIONS CONTROL AND ENFORCEMENT REGULATION OF ORDINANCE.
12649 APTIC NO. 29679

POLLUTIONS PREVENTION PLAN FOR CHIBA AND ICHIHARA CITIES IN CHIBA PREFECTURE.
12650 APTIC NO. 29813

MATERIALS FOR REFERENCE ABOUT ENVIRONMENTAL POLLUTION CONTROL.
12651 APTIC NO. 29818

STATE AND INSPECTION OF PROTECTION OF ATMOSPHERE AND LEGAL REGULATIONS VALID TODAY.
12664 APTIC NO. 29828

POPULATION PLANTS TREES: ENVIRONMENTAL PROTECTION IN JAPAN.
12652 APTIC NO. 29859

FEDERALISM MAKES ENVIRONMENTAL PROTECTION DIFFICULT.
12654 APTIC NO. 29969

THE EVOLUTION OF AIR POLLUTION CONTROL LAWS.
12672 APTIC NO. 30020

LEGAL ASPECTS OF AIR POLLUTION IN BELGIUM AND OTHER NEIGHBORING COUNTRIES.
12659 APTIC NO. 30040

COMPARATIVE STUDY OF CERTAIN PROVISIONS IN MEMBER STATES FOR CONTROLLING AIR POLLUTION.
12656 APTIC NO. 30052

LONG RANGE PLANNING IN AIR RESOURCE MANAGEMENT.
12657 APTIC NO. 30056

AIR POLLUTION--THE STATUS TODAY.
12681 APTIC NO. 28923

ON SOME BASIC PROBLEMS OF THE PURIFICATION OF THE AIR.
12676 APTIC NO. 29591

CHANGE IN POLLUTANTS AND FUTURE PROBLEMS.
12680 APTIC NO. 29743

ENVIRONMENT PRESERVATION - FROM THE ECOLOGICAL POINT OF VIEW.
12678 APTIC NO. 29961

ABSORPTION

MERCURY IN THE ENVIRONMENT.
11992 APTIC NO. 29489

MERCURY IN MAN.
12011 APTIC NO. 29643

DESULFURIZATION OF LIQUEFIED PROPANE GAS. MOLECULAR SIEVE PROCESS.
12053 APTIC NO. 29617

PROBLEM OF OBNOXIOUS ODOR IN INDUSTRIAL POLLUTIONS.
12202 APTIC NO. 29745

SEPARATION OF CO2 AND H2S FROM GAS MIXTURES.
12086 APTIC NO. 29752

RESISTANCE OF PHASES INVOLVED IN MASS TRANSFER DURING ABSORPTION OF A READILY SOLUBLE GAS IN A VENTURI SCRUBBER.
12188 APTIC NO. 29968

COMBUSTION OF WASTES CENTERING AROUND REMOVAL OF NOXIOUS GAS.
12077 APTIC NO. 29985

INFRARED RADIATION PROPERTIES OF SULFUR DIOXIDE.
12269 APTIC NO. 29521

TRIAL CONSTRUCTION OF NON-DISPERSION TYPE VISIBLE LIGHT GAS ANALYZE AND DETERMINATION OF NITROGEN DIOXIDE, CHLORINE, AND BROMINE.
12303 APTIC NO. 29762

INVESTIGATION OF ACTIVATION ANALYSIS OF TRACE MERCURY IN GAS BY RADIOISOTOPE TRACER METHOD.
12328 APTIC NO. 29770

SIMPLIFIED TECHNIQUES IN AIR POLLUTION MEASUREMENT.
12289 APTIC NO. 29771

STUDIES IN INDOOR SWIMMING POOLS WITH OZONIZATION PLANTS.
12353 APTIC NO. 29999

QUANTITATIVE ALDEHYDE DETERMINATION IN THE AIR OF WORKING PLACES.
12317 APTIC NO. 30023

DEVELOPMENT OF A METHOD FOR DETERMINING SULPHUR OXIDES IN FLUE GASES.
12265 APTIC NO. 30084

NO-X CONTROL FROM STATIONARY SOURCES.
12427 APTIC NO. 29764

EFFECT OF SOLUBILITIES OF GASES ON THEIR SCAVENGING BY RAINDROPS.
12442 APTIC NO. 29780

EFFECT OF THE TEMPERATURE DEPENDENCE OF OZONE ABSORPTION ON VERTICAL OZONE DISTRIBUTIONS DEDUCED FROM UMKEHR OBSERVATIONS.
12415 APTIC NO. 29875

ATTACHMENT OF TRACE SUBSTANCES ON ATMOSPHERIC AEROSOLS.
12409 APTIC NO. 30046

A FEW OBSERVATION OF THE GENERATION MECHANISM OF OBNOXIOUS ODOR.
12517 APTIC NO. 29649

SIMULTANEOUS ABSORPTION OF TWO GASES ACCOMPANIED BY REVERSIBLE INSTANTANEOUS CHEMICAL REACTIONS.
12504 APTIC NO. 29917

THE ABSORPTION COEFFICIENT OF A GASEOUS SUBSTANCE ON A SWARMING FILM.
12479 APTIC NO. 29994

PROGRESS REPORT. JANUARY-DECEMBER 1969.
12555 APTIC NO. 28850

LEAD IN THE ENVIRONMENT.
12564 APTIC NO. 29493

Preceding page blank

LEAD MEN HEADING TOWARD DESTRUCTION--SPREADING OMINOUS METAL POLLUTIONS.
12569 APTIC NO. 29789

PROBLEMS OF FLUORINE EMISSION MEASUREMENTS.
12608 APTIC NO. 29736

ABSORPTION (GENERAL)

TWO NEW PROCESSES FOR RECOVERY OF SULPHUR OXIDES FROM SMELTER GASES.
12207 APTIC NO. 29200

MODERN SULFURIC ACID TECHNOLOGY.
12093 APTIC NO. 29607

DESULFURIZATION OF LIQUEFIED PROPANE GAS. MOLECULAR SIEVE PROCESS.
12053 APTIC NO. 29617

COUNTERMEASURES ON PREVENTION OF INDUSTRIAL POLLUTIONS--PART II ON SULFURIC ACID GAS.
12210 APTIC NO. 29646

EQUALIZATION OF PARTICLE TRANSFER IN TRANSFERABLE STRATUM.
12144 APTIC NO. 29928

ACTIVATED CARBON INDUSTRY AND PROBLEMS IN FUTURE - SPHERICAL ACTIVATED CARBON FROM COAL.
12235 APTIC NO. 29942

SULFURIC ACID, SO2 DEVELOPMENTS: REMOVING SO2 AND ACID MIST WITH VENTURI SCRUBBERS.
12209 APTIC NO. 30080

REDUCING SO2 EMISSION FROM STATIONARY SOURCES.
12098 APTIC NO. 30102

ACETALDEHYDE

A FEW OBSERVATION ON THE GENERATION MECHANISM OF OBNOXIOUS ODOR.
12517 APTIC NO. 29649

ACETIC ACID

PLANTS AND POLLUTED AIR.
12230 APTIC NO. 30083

SIMPLIFIED TECHNIQUES IN AIR POLLUTION MEASUREMENT.
12289 APTIC NO. 29771

ACETYLENES

THE EFFECT OF CATALYST POISONS ON THE ACTIVITY OF CARBON MONOXIDE SHIFT CATALYSTS.
12212 APTIC NO. 29944

COMBUSTION OF WASTES CENTERING AROUND REMOVAL OF NOXIOUS GAS.
12077 APTIC NO. 29985

ANALYSIS OF HC OF LOW GRADE IN ATMOSPHERE.
12391 APTIC NO. 29482

ACID SMUTS

AIR POLLUTANTS GENERATED IN INTRA-FURNACE COMBUSTION.
12020 APTIC NO. 29532

ACIDS

NOMOGRAPH GIVES NO OXIDATION.
11993 APTIC NO. 27535

AIR POLLUTANTS GENERATED IN INTRA-FURNACE COMBUSTION.
12020 APTIC NO. 29532

NITROGEN OXIDES ANALYSIS.
12042 APTIC NO. 29538

PROBLEMS OF PUBLIC NUISANCE CAUSED BY BAD ODORS IN HYOGO PREFECTURE.
12029 APTIC NO. 29599

PHYSICAL-CHEMICAL PROBLEMS OF AIR POLLUTION.
11996 APTIC NO. 29786

SOME PROBLEMS ON THE OFFENSIVE ODOR IN HYOGO PREFECTURE.
12030 APTIC NO. 29842

A NEW ENVIRONMENTAL POLLUTANT - POLYCHLORINATED BIPHENYLS (PCB).
12044 APTIC NO. 29984

CAUSES, MEASUREMENT AND LIMITATION OF PARTICULATE EMISSION FROM OIL-FIRED STEAM BOILERS.
12000 APTIC NO. 30021

TWO NEW PROCESSES FOR RECOVERY OF SULPHUR OXIDES FROM SMELTER GASES.
12207 APTIC NO. 29200

MODERN SULFURIC ACID TECHNOLOGY.
12093 APTIC NO. 29607

SMELTER POLLUTION CONTROL--FACTS AND PROBLEMS.
12076 APTIC NO. 29622

FEASIBILITY STUDY OF NEW SULFUR OXIDE CONTROL PROCESSES FOR APPLICATION TO SMELTERS AND POWER PLANTS. PART IV: THE WELLMAN-LORD SO2 RECOVERY PROCESS FOR APPLICATION TO POWER PLANT FLUE GASES. (FINAL REPORT).
12208 APTIC NO. 29641

NEW METHOD OF MANUFACTURING CATALYST FOR EXHAUST GAS.
12133 APTIC NO. 29733

ADSORPTIVITY OF DESULFURIZING ACTIVATED CARBON FOR SULFUROUS ACID GAS (II) - EFFECT OF THE ADSORPTION - RINSING PROCESS ON THE ADSORPTIVITY.
12238 APTIC NO. 29788

REMOVAL OF CHLORINE FROM GASES.
12177 APTIC NO. 29802

ACID MIST PRECIPITATOR MADE OF TEFLON FIBER.
12061 APTIC NO. 29833

GAS ADSORPTION BY VOLCANIC ASH.
12197 APTIC NO. 30030

ELIMINATION OF OXIDES CONTAINED IN CERTAIN RESIDUAL INDUSTRIAL GASES.
12129 APTIC NO. 30043

CONTROL OF POLLUTANT EMISSION AND SULPHURIC ACID CORROSION FROM COMBUSTION OF RESIDUAL FUEL OIL. PART I: LOW-PRESSURE HEATING BOILERS WITH MECHANICAL ATOMIZING BURNERS.
12164 APTIC NO. 30055

SULFURIC ACID, SO2 DEVELOPMENTS: REMOVING SO2 AND ACID MIST WITH VENTURI SCRUBBERS.
12209 APTIC NO 30080

PLANTS AND POLLUTED AIR.
12230 APTIC NO. 30083

THE SCRUBBING OF TAIL GAS FROM SULFURIC ACID PLANTS.
12067 APTIC NO. 30096

SUMMARY OF H2SO4 MANUFACTURE.
12068 APTIC NO. 30099

REDUCING SO2 EMISSION FROM STATIONARY SOURCES.
12098 APTIC NO. 30102

TFE-FLUOROCARBON FIBER FILTER BAGS--IT COSTS MORE TO GO FIRST CLASS.
12109 APTIC NO. 30121

REPORT FOR THE INVESTIGATION ON THE METHOD OF SO2 TEST.
12301 APTIC NO. 29381

ON THE EFFECT OF ACCOMPANYING GASES IN QUANTITATIVE ANALYSIS OF HYDROGEN SULFIDE USING METHYLENE BLUE.
12343 APTIC NO. 29505

COMPARISON OF VARIOUS METHODS OF DETERMINING QUARTZ CONTENT IN NOXIOUS DUST.
12263 APTIC NO. 29546

RESULTS OF COMPARATIVE TESTS ON QUARTZ CONTENT OBTAINED FROM LABORATORIES USING VARIOUS TECHNIQUES OF DETERMINATION.
12327 APTIC NO. 29552

A GAS ANALYSER FOR THE MEASUREMENT OF IMPURITIES IN AIR.
12277 APTIC NO. 29581

OXIDATION OF NITROGEN MONOXIDE.
12320 APTIC NO. 29676

EXPERIENCES WITH FLUORINE EMISSION MEASUREMENTS.
12290 APTIC NO. 29737

MEASUREMENT OF GASEOUS AND PARTICULATE FLUORINE EMISSIONS.
12322 APTIC NO. 29738

SIMPLIFIED TECHNIQUES IN AIR POLLUTION MEASUREMENT.
12289 APTIC NO. 29771

TESTS WITH A SAMPLING AND MEASUREMENT METHOD FOR ROUTINE DETERMINATION OF FLUORINE IN THE LOWER ATMOSPHERE.
12262 APTIC NO. 29887

AUTOMATIC MEASURING APPARATUS OF FLUORIDE GASSES IN AIR.
12299 APTIC NO. 29966

FRACTIONATION OF OXYGEN ISOTOPES BETWEEN NO AND H20.
12297 APTIC NO. 30114

A STUDY OF AIR POLLUTION AROUND A SULPHURIC ACID PLANT.
12374 APTIC NO. 29883

POLLUTIONS AND TOKYO METROPOLITAN GOVERNMENT.
12365 APTIC NO. 29973

ATMOSPHERIC REACTIONS AND SCAVENGING PROCESSES.
12426 APTIC NO. 29774

FORMATION OF PARTICLES BY PHOTOLYSIS AND RADIOLYSIS.
12407 APTIC NO. 29809

STUDIES ON PHOTOCHEMICAL REACTION BETWEEN SULFURIC ACID GAS AND ORGANIC COMPOUNDS (2).
12512 APTIC NO. 29463

A FEW OBSERVATION ON THE GENERATION MECHANISM OF OBNOXIOUS ODOR.
12517 APTIC NO. 29649

METHOD OF CALCULATING EQUILIBRIUM COMPOSITIONS IN INTERACTION OF NITROGEN OXIDES WITH NITRIC ACID SOLUTIONS.
12470 APTIC NO. 29800

THE ABSORPTION COEFFICIENT OF A GASEOUS SUBSTANCE ON A SWARMING FILM.
12479 APTIC NO. 29994

DETERMINATION OF THE DISPERSION OF SCATTERING NEAR THE CRITICAL POINT USING THE SCATTERED LIGHT INDICATRIX.
12499 APTIC NO. 30051

AIR POLLUTION.
12575 APTIC NO. 29949

PROBLEMS OF FLUORINE EMISSION MEASUREMENTS.
12608 APTIC NO. 29736

DAMAGE TO PLANTS BY AIR POLLUTANTS.
12603 APTIC NO. 29746

COMPLEX ALKALI IRON SULFATES A CONTRIBUTION TO THE THERMODYNAMICS OF FIRESDIDE HIGH-TEMPERATURE CORROSION.
12616 APTIC NO. 29783

PROBLEMS IN INDUSTRIAL POWER PLANTS.
12618 APTIC NO. 29956

AN SO2 REMOVAL AND RECOVERY PROCESS.
12630 APTIC NO. 29144

COLLECTION OF LEGISLATIONS RELATED WITH MITI CONCERNING POLLUTIONS.
12646 APTIC NO. 29504

MATERIALS FOR REFERENCE ABOUT ENVIRONMENTAL POLLUTION CONTROL.
12651 APTIC NO. 29818

ACROLEIN

A FEW OBSERVATION ON THE GENERATION MECHANISM OF OBNOXIOUS ODOR.
12517 APTIC NO. 29649

COLLECTION OF LEGISLATIONS RELATED WITH MITI CONCERNING POLLUTIONS.
12646 APTIC NO. 29504

ACUTE

SOME RECENT TOPICS IN AIR POLLUTION AND HEALTH IN LONDON.
12562 APTIC NO. 29882

THE ROLE OF AIR POLLUTION ON CHRONIC OBSTRUCTIVE PULMONARY DISEASE.
12539 APTIC NO. 30136

STUDIES ON THE SMOKE DAMAGE OF TREES. (I) ON THE ACUTE DAMAGE SYMPTOMS BY THE SO2.
12607 APTIC NO. 29976

ADAPTATION

OXYGEN AFFINITY AND ACID-BASE STATUS OF HUMAN BLOOD DURING EXPOSURE TO HYPOXIA AND CARBON MONOXIDE.
12567 APTIC NO. 29528

FOUR-ALKYL LEAD AND ENVIRONMENTAL POLLUTION.
12588 APTIC NO. 29825

ADHESIVES

A NEW ENVIRONMENTAL POLLUTANT - POLYCHLORINATED BIPHENYLS (PCB).
12044 APTIC NO. 29984

ACTIVATED CARBON INDUSTRY AND PROBLEMS IN FUTURE - SPHERICAL ACTIVATED CARBON FROM COAL.
12235 APTIC NO. 29942

ON ADHESION OF SMOKE MIST PARTICULATES FLOWING THROUGH BETWEEN PLAN PARALLEL PLATES.
12518 APTIC NO. 29729

ADSORPTION

CAUSES, MEASUREMENT AND LIMITATION OF PARTICULATE EMISSION FROM OIL-FIRED STEAM BOILERS.
12000 APTIC NO. 30021

FUEL VAPOR ADSORBING APPARATUS.
12163 APTIC NO. 27562

COMPARISON OF THE CATALYTIC ACTIVITY OF MANGANESE DIOXIDE OF ELECTROLYTIC ORIGIN AND OF MANGANESE HYDROXIDE IN THE OXIDATION OF CARBON OXIDES. IV. ADSORPTION AND DESORPTION OF THE REAGENTS AND THE PRODUCTS OF THE REACTION ON MANGANESE HYDROXIDE.
12192 APTIC NO. 29506

ODOR TREATMENT AND ITS COST AT RENDERING FACTORIES.
12211 APTIC NO. 29601

ADSORPTION OF HYDROGEN AND CARBON MONOXIDE AND THEIR MIXTURES ON IRON FISCHER-TROPSCH CATALYSTS. PART I: SYNTHESIS EXPERIMENTS AND ADSORPTION STUDIES WITH HYDROGEN AND CARBON MONOXIDE ON PROMOTED AND UNPROMOTED IRON CATALYSTS.
12216 APTIC NO. 29701

EXHAUST GAS PURIFIER.
12179 APTIC NO. 29905

COMBUSTION OF WASTES CENTERING AROUND REMOVAL OF NOXIOUS GAS.
12077 APTIC NO. 29985

FACTORS TO CONSIDER IN SELECTING AIR POLLUTION CONTROL EQUIPMENT.
12195 APTIC NO. 29996

GAS ADSORPTION BY VOLCANIC ASH.
12197 APTIC NO. 30030

INFRARED SPECTROSCOPIC STUDY OF THE CATALYTIC OXIDATION OF CARBON MONOXIDE TO CARBON DIOXIDE ON MANGANESE DIOXIDE.
12105 APTIC NO. 30091

SIMPLIFIED TECHNIQUES IN AIR POLLUTION MEASUREMENT.
12289 APTIC NO. 29771

NO-X CONTROL FROM STATIONARY SOURCES.
12427 APTIC NO. 29764

THE ADSORPTION OF CARBON MONOXIDE ON CU(001) LEED AND AUGER EMISSION STUDIES.
12496 APTIC NO. 29799

ADSORPTION (GENERAL)

ON CONDITIONS FOR PROPER USE OF ACTIVATED CARBON AS AN AIR PURIFICATION AGENT (2) - ITS EFFICIENCY FOR REMOVAL OF SO2 GAS.
12113 APTIC NO. 29496

ADSORPTION OF SULFUR DIOXIDE GAS BY ACTIVATED CARBON OR MOLECULAR SIEVE.
12201 APTIC NO. 29497

COUNTERMEASURES ON PREVENTION OF INDUSTRIAL POLLUTIONS--PART II ON SULFURIC ACID GAS.
12210 APTIC NO. 29646

METHOD TO REMOVE HARMFUL SUBSTANCES FROM STACK GAS BY-PRODUCING AMMONIUM SULFATE AND OTHERS (XV) - ACTIVATION ENERGY OF ACTIVATED CARBON FOR SO2 ADSORPTION.
12161 APTIC NO. 29648

ABSORPTION OF SULFUROUS ACID GAS BY WATER SOLUTION OF POTASSIUM PHOSPHATE.
12172 APTIC NO. 29731

ON REGENERATION OF ACTIVATED CARBON HAVING ADSORBED SO2.
12173 APTIC NO. 29732

ADSORPTIVITY OF DESULFURIZING ACTIVATED CARBON FOR SULFUROUS ACID GAS (II) - EFFECT OF THE ADSORPTION - RINSING PROCESS ON THE ADSORPTIVITY.
12238 APTIC NO. 29788

ADSORPTIVITY OF DESULFURIZING ACTIVATED CARBON FOR SULFUROUS ACID GAS (I). PERFORMANCE VARIATION OF ACTIVATED CARBON IN PILOT PLANT.
12206 APTIC NO. 29939

STUDY ON THE DESULFURIZATION OF FLUE GAS BY THE USE OF DRY LIME.
12198 APTIC NO. 29972

METHOD FOR MANUFACTURING SPHERICAL ACTIVE CARBON FROM COAL.
12141 APTIC NO. 29988

PROCESS FOR REMOVING SULPHUR FROM GASES.
12139 APTIC NO. 30049

ADULTS

LEAD POLLUTION--A GROWING HAZARD TO PUBLIC HEALTH.
11999 APTIC NO. 29872

PARALLEL DETERMINATION OF NICKEL AND COBALT IN URINE AND ATMOSPHERE.
12300 APTIC NO. 29953

PULMONARY COMPLICATIONS OF ASBESTOS EXPOSURE.
12552 APTIC NO. 29221

INTRODUCTION AND GENERAL DESCRIPTION OF THE STUDY AND OF THE PROCEDURES FOR PROLONGED EXPOSURE TO CARBON MONOXIDE AND HYPOXIA.
12530 APTIC NO. 29503

STUDIES ON THE INFLUENCE OF AIR POLLUTION ON THE HEALTH OF THE PEOPLE AT BELOSLAV, DISTRICT OF VARNA, PEOPLE S REPUBLIC OF BULGARIA.
12557 APTIC NO. 29573

EFFECTS OF ATMOSPHERIC LEAD ON TRAFFIC POLICEMEN IN A MEDIUM SIZED CITY.
12566 APTIC NO. 29958

CHANGES IN AIRWAYS CONDUCTANCE ON SMOKING A CIGARETTE.
12540 APTIC NO. 30135

ADVECTION

A NUMERICAL EXPERIMENT IN SIMULATING THE TRANSPORT OF SULFUR DIOXIDE THROUGH THE ATMOSPHERE.
12446 APTIC NO. 29952

DISCUSSIONS DEPTH OF THE BOUNDARY LAYER.
ERROR

ADVISORY SERVICES

ENVIRONMENTAL CONTROL AND THE INSURANCE SAFETY ENGINEER.
12170 APTIC NO. 29115

A SUGGESTED OUTLINE FOR PROVIDING INFORMATION ON FACILITIES EXISTING IN COUNTRIES AT PILOT STATION.
12360 APTIC NO. 29055

POLLUTIONS AND TOKYO METROPOLITAN GOVERNMENT.
12365 APTIC NO. 29973

INTERSOCIETY COMMITTEE METHODS FOR AMBIENT AIR SAMPLING AND ANALYSIS. PREFACE.
12662 APTIC NO. 29491

COMMISSION FOR INDUSTRIAL DUST PROBLEMS IN GERMANY.
12520 APTIC NO. 29555

PRESENT SITUATION OF ADMINISTRATION CONCERNING POLLUTIONS.
12648 APTIC NO. 29598

SOME RECENT TOPICS IN AIR POLLUTION AND HEALTH IN NEW YORK.
12668 APTIC NO. 29817

THE ROLE OF INDUSTRY--AIR QUALITY.
12661 APTIC NO. 29845

AERODYNAMICS

JET AIRCRAFT AIR POLLUTANT PRODUCTION AND DISPERSION.
12016 APTIC NO. 30130

PERFORMANCE OF CYCLONE FOR LOW-PRESSURE AIR FLOW.
12182 APTIC NO. 29728

PREVENTING AIR POLLUTION FROM EXHAUST AEROSOLS.
12070 APTIC NO. 30125

THERMODYNAMICS OF THE AEROSOLS IN THE ATMOSPHERE.
12428 APTIC NO. 29785

CALCULATION OF A JET AXIS IN A DRIFTING FLOW.
12507 APTIC NO. 30042

SHAPE FACTORS FOR AIRBORNE PARTICLES.
12503 APTIC NO. 30085

AEROSOL GENERATORS

MITSUBISHI-RESEARCH DISC SCRUBBER.
12080 APTIC NO. 29536

MITSUBISHI-RESEARCH WEDGE SCRUBBER.
12081 APTIC NO. 29537

DEVICE TO HOLD IN PLACE ATOMIZER NOZZLES OF A WASHER DEVICE FOR SULFUR OXIDE GAS CONTAINED IN COMBUSTION EXHAUST GAS FROM BOILER.
12138 APTIC NO. 29685

STEAM-SMOKE MIST CONTACT DEVICE.
12174 APTIC NO. 29792

COLLECTION EFFICIENCY OF WATER DROPLETS IN AGCL AEROSOL.
12430 APTIC NO. 29687

COLLECTION EFFICIENCIES OF RAINDROPS FOR SUBMICRON PARTICULATES.
12404 APTIC NO. 29709

A NEW DUST-GENERATING SYSTEM FOR INHALATION STUDIES.
12486 APTIC NO. 29653

CHARGES ON DROPLETS PRODUCED BY ATOMIZATION OF SOLUTIONS.
12482 APTIC NO. 29919

AEROSOLS

EMISSION OF AIR POLLUTANTS FROM AIRCRAFT JET ENGINES.
12035 APTIC NO. 29734

A NEW FILTER FOR SUSPENDED MATTER WITH HIGH COLLECTION EFFICIENCY AND LOW FLOW RESISTANCE.
12231 APTIC NO. 29578

COLLECTION EFFICIENCIES OF GLASS FIBER FILTERS FOR EACH SIZE OF LEAD AEROSOLS.
12140 APTIC NO. 29664

FILTRATION OF MULTI-DISPERSING AEROSOL UNDER THE FORCE OF GRAVITY.
12115 APTIC NO. 29730

EFFICIENCY OF FILTERS FOR RADIOACTIVE AEROSOL.
12155 APTIC NO. 29768

ELECTROSTATIC FIELD BREAKDOWN PHENOMENA IN APPLYING CHARGED PARTICLES.
12236 APTIC NO. 30006

LEAD SMELTING PLANT CONTROLS AIR EMISSIONS.
12069 APTIC NO. 30124

PREVENTING AIR POLLUTION FROM EXHAUST AEROSOLS.
12070 APTIC NO. 30125

REVIEW OF CASCADE IMPACTORS FOR PARTICLE SIZE ANALYSIS AND A NEW CALIBRATION FOR THE CASELLA CASCADE IMPACTOR.
12311 APTIC NO. 29270

NEW METHODS OF DETERMINING AIR POLLUTION.
12316 APTIC NO. 29595

AN ASPIRATION INSTALLATION OF HIGH EFFICIENCY FOR COLLECTING SAMPLES OF RADIOACTIVE AEROSOLS FROM THE ATMOSPHERE.
12318 APTIC NO. 29670

SIMPLIFIED TECHNIQUES IN AIR POLLUTION MEASUREMENT.
12289 APTIC NO. 29771

POROUS ANALYTICAL FILTERS AND THEIR USE IN AIR HYGIENE.
12346 APTIC NO. 29784

DETERMINATION OF RUTIN AEROSOL IN THE AIR.
12329 APTIC NO. 29806

FLUOROMETRIC DETERMINATION OF BROMINE: APPLICATION TO MEASUREMENT OF BROMINE AEROSOLS.
12255 APTIC NO. 29811

PARTICLE SIZE DISTRIBUTION IN AEROSOLS FORMED FROM GASEOUS REACTANTS.
12268 APTIC NO. 29854

PHOTON DETECTION OF LIGHT DIFFUSION WITH ULTRAFINE AEROSOLS.
12351 APTIC NO. 30038

PIEZOLECTRIC-ELECTROSTATIC AEROSOL MASS CONCENTRATION MONITOR.
12331 APTIC NO. 30061

A COMPREHENSIVE SAMPLING SYSTEM FOR STUDYING THE RELATION BETWEEN VISIBILITY, METEOROLOGICAL PARAMETERS AND ATMOSPHERIC POLLUTION.
12276 APTIC NO. 30082

EXPERIMENT ON PHOTOCHEMICAL REACTION OF MOTOR EXHAUST GAS.
12469 APTIC NO. 29500

ON THE DEPOSITION OF MATTER ON SPHERICAL AEROSOL PARTICLES IN THE RANGE OF INTERMEDIATE KNUDSEN NUMBERS.
12405 APTIC NO. 29667

MICROSTRUCTURE OF ATMOSPHERIC SURFACE LAYER AEROSOLS.
12433 APTIC NO. 29668

COLLECTION EFFICIENCY OF WATER DROPLETS IN AGCL AEROSOL.
12430 APTIC NO. 29687

PRIORITIES IN SCAVENGING RESEARCH.
12419 APTIC NO. 29689

IN-CLOUD SCAVENGING ANALYSIS FROM COSMOGENIC RADIONUCLIDE MEASUREMENTS.
12440 APTIC NO. 29694

STABLE ELEMENTS OF THE ATMOSPHERE AS TRACERS OF PRECIPITATION SCAVENGING.
12445 APTIC NO. 29705

SCAVENGING BY SNOW AND ICE CRYSTALS.
12456 APTIC NO. 29707

COLLECTION EFFICIENCIES OF RAINDROPS FOR SUBMICRON PARTICULATES.
12404 APTIC NO. 29709

COLLECTION EFFICIENCY IN WASHOUT BY RAIN.
12406 APTIC NO. 29710

SCAVENGING OF AEROSOL PARTICLES BY SPRAYS.
12437 APTIC NO. 29711

PARTICLE AND DEUTERIUM CONTENT IN SNOW.
12449 APTIC NO. 29775

THERMODYNAMICS OF THE AEROSOLS IN THE ATMOSPHERE.
12428 APTIC NO. 29785

FORMATION OF PARTICLES BY PHOTOLYSIS AND RADIOLYSIS.
12407 APTIC NO. 29809

ATTACHMENT OF TRACE SUBSTANCES ON ATMOSPHERIC AEROSOLS.
12409 APTIC NO. 30046

ON PLUMBIC POLLUTION OF MUNICIPAL ATMOSPHERE--BEHAVIORS OF PLUMBIC COMPOUND AS AEROSOL.
12431 APTIC NO. 30073

CHEMICAL PROCESSES AT THE AIR-SEA INTERFACE: THE BEHAVIOR OF FLUORINE.
12468 APTIC NO. 30126

COAGULATION OF DUST PARTICLES, IN PARTICULAR BY AEROSOLS OF SEA WATER SALT.
ERROR

OBSERVATIONS ON THE FIGHT AGAINST DUST BY MEANS OF SALINE AEROSOLS.
12475 APTIC NO. 29551

ADHESION TO PIPE S WALL WITH AEROSOL PARTICLES FLOWING IN A PIPE AS TURBULENT FLOW.
12523 APTIC NO. 30071

SHAPE FACTORS FOR AIRBORNE PARTICLES.
12503 APTIC NO. 30085

APPROXIMATE SOLUTION OF THE EQUATIONS FOR AEROSOL AGGLOMERATION.
12483 APTIC NO. 30111

PROBLEMS OF FLUORINE EMISSION MEASUREMENTS.
12608 APTIC NO. 29736

AFRICA

POLLUTION TECHNOLOGY--WHAT THEY RE DOING OVERSEAS.
12244 APTIC NO. 29650

SPECIAL COLUMN CONFIGURATION FOR THE ANALYSIS OF SOME INORGANIC GASES AND LIGHT HYDROCARBONS.
12315 APTIC NO. 30029

A STUDY OF AIR POLLUTION AROUND A SULPHURIC ACID PLANT.
12374 APTIC NO. 29883

AFTERBURNERS

OIL REFINERS PREPARE FOR ANIT-POLLUTION CONTROLS.
12040 APTIC NO. 29127

PURIFICATION DEVICE FOR AUTOMOTIVE EXHAUST GAS.
12156 APTIC NO. 29439

EMISSION CONTROL BY EXHAUST MANIFOLD REACTOR--AN INITIAL STUDY FOR SMALL ENGINES.
12163 APTIC NO. 29629

POLLUTION TECHNOLOGY--WHAT THEY RE DOING OVERSEAS.
12244 APTIC NO. 29650

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

EXHAUST SYSTEM.
12165 APTIC NO. 29723

GASIFICATION OF HYDROCARBONS.
12137 APTIC NO. 29779

ATTEMPT AT A THERMODYNAMIC SOLUTION: AUTOMOBILE EXHAUST GASES.
12147 APTIC NO. 29906

STUDY ON AUTO EXHAUST.
12241 APTIC NO. 29909

FUME INCINERATION: EFFECTIVE, EFFICIENT.
12100 APTIC NO. 30077

FIRST RESULTS WITH THE M.A.N.-EXPERIMENTAL GAS TURBINE FOR COMMERCIAL VEHICLES.
12131 APTIC NO. 30088

AGE

PULMONARY COMPLICATIONS OF ASBESTOS EXPOSURE.
12552 APTIC NO. 29221

RAPID ASSESSMENT OF TESTS OF POLLUTANT EFFECTS IN MAN.
12536 APTIC NO. 29431

INTRODUCTION AND GENERAL DESCRIPTION OF THE STUDY AND OF THE PROCEDURES FOR PROLONGED EXPOSURE TO CARBON MONOXIDE AND HYPOXIA.
12530 APTIC NO. 29503

STUDIES ON THE INFLUENCE OF AIR POLLUTION ON THE HEALTH OF THE PEOPLE AT BELOSLAV, DISTRICT OF VARNA, PEOPLE S REPUBLIC OF BULGARIA.
12557 APTIC NO. 29573

ITAI-ITAI (OUCH-OUCH) DISEASE AND CADMIUM POLLUTION IN JAPAN.
12581 APTIC NO. 29673

EFFECTS OF SOOT AND SMOKE ON THE HEALTH OF SCHOOL CHILDREN.
12556 APTIC NO. 29791

STUDY ON THE EFFECTS OF AIR POLLUTION ON HUMAN BODY--WITH SPECIAL REFERENCE TO OBJECTIVE, COMPARATIVE STUDY OF ALL THE INHABITANTS BY CHEST X-RAY RINDINGS.
12554 APTIC NO. 29904

STUDIES ON PROGNOSIS OF CHRONIC BRONCHITIS.
12587 APTIC NO. 29916

THE ROLE OF TRACE METALS IN CHEMICAL CARCINOGENESIS: ASBESTOS CANCERS.
12543 APTIC NO. 29993

STUDIES ON THE SMOKE DAMAGE OF TREES. (I) ON THE ACUTE DAMAGE SYMPTOMS BY THE SO2.
12607 APTIC NO. 29976

AIR CONDITIONING EQUIPMEN

MEASUREMENT DATA OBTAINED FROM EXPERIMENTS WITH THE DYNAVANE HIGH CAPACITY DRY TYPE DUST SEPARATOR.
12108 APTIC NO. 28791

ON PUBLIC NUISANCE BY, AND ENVIRONMENTAL HYGIENE OF, PAINT MANUFACTURING INDUSTRY.
12059 APTIC NO. 29761

CASTING WORK ENVIRONMENTS AND PUBLIC NUISANCE.
12655 APTIC NO. 29975

AIR POLLUTION EPISODES

REPORT FROM THE NETHERLANDS: MEASUREMENT GRID FOR AIR POLLUTION.
12364 APTIC NO. 29798

EPISODE 104.
12410 APTIC NO. 29695

AIR POLLUTION IN AN URBAN ENVIRONMENT.
12413 APTIC NO. 30045

ITAI-ITAI (OUCH-OUCH) DISEASE AND CADMIUM POLLUTION IN JAPAN.
12581 APTIC NO. 29673

PATIENT ADVICE DURING ACUTE AIR POLLUTION EPISODE.
12531 APTIC NO. 29878

AIR POLLUTION.
12575 APTIC NO. 29949

SIGNAL PROCESSING TECHNIQUES FOR ESTIMATING PARAMETERS OF CERTAIN BIOLOGICAL MODELS.
12570 APTIC NO. 29997

ADDENDUM TO ENVIRONMENTAL POLLUTIONS IN KAWASAKI CITY.
12647 APTIC NO. 29511

SOME RECENT TOPICS IN AIR POLLUTION AND HEALTH IN NEW YORK.
12668 APTIC NO. 29817

MATERIALS FOR REFERENCE ABOUT ENVIRONMENTAL POLLUTION CONTROL.
12651 APTIC NO. 29818

LEGAL ASPECTS OF AIR POLLUTION IN BELGIUM AND OTHER NEIGHBORING COUNTRIES.
12659 APTIC NO. 30040

AIR POLLUTION--THE STATUS TODAY.
12681 APTIC NO. 28923

NOBODY BREATHES FRESH AIR. FACTS AND ARGUMENTS ABOUT AIR POLLUTION.
12677 APTIC NO. 29459

AIR POLLUTION FORECASTING

A NATIONAL ESTIMATE OF PUBLIC AND INDUSTRIAL HEAT REJECTION REQUIREMENTS BY DECADES THROUGH THE YEAR 2000 AD.
12018 APTIC NO. 29272

A MEASUREMENT GRID FOR AIR POLLUTION IN THE MOUTH OF THE RIVER RHINE IN ROTTERDAM.
12333 APTIC NO. 29460

RESEARCH FACILITIES NECESSARY TO ADEQUATELY SUPPORT MEASUREMENT OF LOW LEVELS OF POLLUTANTS AND FOLLOW THEIR TRENDS.
12359 APTIC NO. 29050

NEW EYE ON THE AIR.
12412 APTIC NO. 29644

EPISODE 104.
12410 APTIC NO. 29695

EVALUATION TRIALS OF URBAN AIR POLLUTION MODELS.
12439 APTIC NO. 29697

ATMOSPHERIC DISPERSION OF STACK EFFLUENTS.
12458 APTIC NO. 29773

ATMOSPHERIC REACTIONS AND SCAVENGING PROCESSES.
12426 APTIC NO. 29774

AIR POLLUTION CONTROL SYSTEM (3).
12401 APTIC NO. 29795

AIR POLLUTION IN AN URBAN ENVIRONMENT.
12413 APTIC NO. 30045

LONG RANGE PLANNING IN AIR RESOURCE MANAGEMENT.
12657 APTIC NO. 30056

AIR POLLUTION--THE STATUS TODAY.
12681 APTIC NO. 28923

AIR QUALITY CRITERIA

ENVIRONMENTAL POLLUTION CONTROL MEASURES IN WEST EUROPE AND PROBLEMS OF CARBIDE ELECTRIC FURNACE DUST IN JAPAN.
12073 APTIC NO. 29675

CHART FOR EVALUATION OF THE RISK OF SILICOSIS.
12542 APTIC NO. 29559

AIR POLLUTION.
12575 APTIC NO. 29949

CRITERIA OF INJURIOUSNESS AS THE BASIS OF STANDARDS OF THE HYGIENE OF THE AIR.
12642 APTIC NO. 29574

ON THE BASIC LAW FOR ENVIRONMENTAL POLLUTION CONTROL, NOISE CONTROL LAW, WATER POLLUTION PREVENTION LAW, AND AIR POLLUTION PREVENTION LAW.
12670 APTIC NO. 29509

AIR QUALITY MEASUREMENT P

A PROGRAM TO SAMPLE AND ANALYZE AIR POLLUTION IN THE VICINITY OF A CHEMICAL RECLAMATION PLANT.
12039 APTIC NO. 29698

A MEASUREMENT GRID FOR AIR POLLUTION IN THE MOUTH OF THE RIVER RHINE IN ROTTERDAM.
12333 APTIC NO. 29460

RESEARCH FACILITIES NECESSARY TO ADEQUATELY SUPPORT MEASUREMENT OF LOW LEVELS OF POLLUTANTS AND FOLLOW THEIR TRENDS.
12359 APTIC NO. 29050

A SUGGESTED OUTLINE FOR PROVIDING INFORMATION ON FACILITIES EXISTING IN COUNTRIES AT PILOT STATION.
12360 APTIC NO. 29055

AIR POLLUTION BY SMOKE AND SO2.
12372 APTIC NO. 29289

MERCURY IN THE AIR.
12362 APTIC NO. 29490

AIR POLLUTION BY SMOKE AND SO2.
12373 APTIC NO. 29566

STATISTICAL ANALYSES OF AIR POLLUTION SAMPLING FREQUENCY IN AN EPIDEMIOLOGIC STUDY.
12378 APTIC NO. 29655

REPORT FROM THE NETHERLANDS: MEASUREMENT GRID FOR AIR POLLUTION.
12364 APTIC NO. 29798

POLLUTIONS AND TOKYO METROPOLITAN GOVERNMENT.
12365 APTIC NO. 29973

CONCASTER, AN AREA STUDY.
12366 APTIC NO. 30047

THE TENDENCY OF AIR POLLUTION AT NAGOYA CITY OBSERVED FROM THE WEIGHT OF FALLING DUST.
12396 APTIC NO. 30076

DISTRIBUTION OF POLLUTION AT SOME COUNTRY SITES.
12425 APTIC NO. 29582

NEW EYE ON THE AIR.
12412 APTIC NO. 29644

DISSIPATION OF SO2 GENERATED IN A STEELWORK INTO THE GROUND LAYER OF THE ATMOSPHERE.
12467 APTIC NO. 29867

ITAI-ITAI (OUCH-OUCH) DISEASE AND CADMIUM POLLUTION IN JAPAN.
12581 APTIC NO. 29673

STUDY ON THE EFFECTS OF AIR POLLUTION ON HUMAN BODY--WITH SPECIAL REFERENCE TO OBJECTIVE, COMPARATIVE STUDY OF ALL THE INHABITANTS BY CHEST X-RAY RINDINGS.
12554 APTIC NO. 29904

CONTINUOUS MEASUREMENT SYSTEM OF ATMOSPHERIC POLLUTION AT THE MOUTH OF THE RHINE, NEAR ROTTERDAM.
12645 APTIC NO. 28696

THE TASKS OF THE PUBLIC HEALTH SYSTEM IN THE FIELD OF THE HYGIENE OF THE AIR IN THE PEOPLE S REPUBLIC OF HUNGARY.
12667 APTIC NO. 29592

PRESENT SITUATION OF ADMINISTRATION CONCERNING POLLUTIONS.
12648 APTIC NO. 29598

CHIBA PREFECTURAL ORDINANCE ON POLLUTIONS CONTROL AND ENFORCEMENT REGULATION OF ORDINANCE.
12649 APTIC NO. 29679

POLLUTIONS PREVENTION PLAN FOR CHIBA AND ICHIHARA CITIES IN CHIBA PREFECTURE.
12650 APTIC NO. 29813

LEGAL ASPECTS OF AIR POLLUTION IN BELGIUM AND OTHER NEIGHBORING COUNTRIES.
12659 APTIC NO. 30040

LONG RANGE PLANNING IN AIR RESOURCE MANAGEMENT.
12657 APTIC NO. 30056

AIR QUALITY STANDARDS

THE INDUSTRIAL FIRING SYSTEMS OF THE 1970'S.
12025 APTIC NO. 28968

MERCURY IN THE ENVIRONMENT.
11992 APTIC NO. 29489

THE EXHAUST GAS COMPOSITION AT THE FM GASOLINE ENGINE.
12046 APTIC NO. 29516

NITROGEN OXIDES ANALYSIS.
12042 APTIC NO. 29538

CONSIDERATIONS IN THE CONSTRUCTION OF LARGE REFUSE INCINERATORS.
12026 APTIC NO. 29547

NITROGEN DIOXIDE.
11988 APTIC NO. 29567

MERCURY IN MAN.
12011 APTIC NO. 29643

OBSERVATIONS ON THE ELIMINATION OF DUST.
12143 APTIC NO. 29554

ENVIRONMENTAL POLLUTION CONTROL MEASURES IN WEST EUROPE AND PROBLEMS OF CARBIDE ELECTRIC FURNACE DUST IN JAPAN.
12073 APTIC NO. 29675

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

POLLUTION CONTROL AT THE SAGAMIHARA PLANT OF OUR TOKYO MACHINERY WORKS.
12199 APTIC NO. 29821

THE TENDENCY OF AIR POLLUTION AT NAGOYA CITY OBSERVED FROM THE WEIGHT OF FALLING DUST.
12396 APTIC NO. 30076

SOME PLANS FOR FUTURE STUDIES FOR LOW LEVEL OF LEAD ON THE HUMAN BEING.
12553 APTIC NO. 29815

RECENT RESEARCH INTO THE EFFECT OF LOW LEVEL CARBON MONOXIDE EXPOSURE ON PSYCHOMOTOR PERFORMANCE IN HEALTHY HUMANS.
12574 APTIC NO. 29846

AIR POLLUTION.
12575 APTIC NO. 29949

ADDITION OF LEAD TO FUEL - HARMFUL OR DANGEROUS? (Bleizusaetze im Kraftstoff - harmlos oder gefaehrlich)? Text in German. VDI (Ver. Deut. Ingr.) Nachr. (Berlin), 25(9):6, 1971.
12527 APTIC NO. 30000

THE EFFECTS OF LOW LEVEL FLUORINE POLLUTION IN A MOUNTAIN VALLEY.
12595 APTIC NO. 29991

ATMOSPHERIC POLLUTANTS FRENCH LEGISLATION. STANDARD MEASURING METHODS. RECENT COMMERCIAL APPARATUS.
12638 APTIC NO. 29003

HOW THE LAWS AND AGENCIES AFFECT YOU.
12641 APTIC NO. 29113

COMPARATIVE STUDY OF PERMISSIBLE LIMITS OF AIR DUSTINESS IN VARIOUS COUNTRIES.
12639 APTIC NO. 29543

CRITERIA OF INJURIOUSNESS AS THE BASIS OF STANDARDS OF THE HYGIENE OF THE AIR.
12642 APTIC NO. 29574

STANDARDS OF AIR POLLUTION.
12643 APTIC NO. 29776

EXPANSION AND STRENGTHENING OF AIR POLLUTION CONTROL COUNTERMEASURES.
12671 APTIC NO. 29495

COLLECTION OF LEGISLATIONS RELATED WITH MITI CONCERNING POLLUTIONS.
12646 APTIC NO. 29504

ON THE BASIC LAW FOR ENVIRONMENTAL POLLUTION CONTROL, NOISE CONTROL LAW, WATER POLLUTION PREVENTION LAW, AND AIR POLLUTION PREVENTION LAW.
12670 APTIC NO. 29509

THE TASKS OF THE PUBLIC HEALTH SYSTEM IN THE FIELD OF THE HYGIENE OF THE AIR IN THE PEOPLE S REPUBLIC OF HUNGARY.
12667 APTIC NO. 29592

THE TASKS OF THE PUBLIC HYGIENE SYSTEM OF THE USSR IN THE FIELD OF THE PURIFICATION OF THE AIR.
12665 APTIC NO. 29594

PRESENT SITUATION OF ADMINISTRATION CONCERNING POLLUTIONS.
12648 APTIC NO. 29598

THE ROLE OF INDUSTRY--AIR QUALITY.
12661 APTIC NO. 29845

AIR RESOURCE MANAGEMENT

COMPUTER APPLICATION IN THE ENVIRONMENTAL SCIENCE ANALYSIS AND CONTROL OF ENVIROMENTAL AIR.
12335 APTIC NO. 29657

A METHOD FOR OPTIMIZING POLLUTANT EMISSIONS IN AN AIRSHED.
12448 APTIC NO. 29903

TOWARD A RATIONAL POWER POLICY: RECONCILING NEEDS FOR ENERGY AND ENVIRONMENTAL PROTECTION.
12403 APTIC NO. 29986

INDUSTRIAL EMISSIONS: AN ANALYSIS OF SOME KEY FACTORS.
12669 APTIC NO. 29469

A PHILOSOPHY OF INDUSTRIAL AIR POLLUTION CONTROL.
12666 APTIC NO. 29485

LONG RANGE PLANNING IN AIR RESOURCE MANAGEMENT.
12657 APTIC NO. 30056

AIR-FUEL RATIO

THE EXHAUST GAS COMPOSITION AT THE FM GASOLINE ENGINE.
12046 APTIC NO. 29516

THE AUTOMOBILE AND AIR POLLUTION.
12186 APTIC NO. 29633

CONTROL OF EXHAUST GAS EMISSION OF MITSUBISHI COLT GALANT.
12228 APTIC NO. 29901

ATTEMPT AT A THERMODYNAMIC SOLUTION: AUTOMOBILE EXHAUST GASES.
12147 APTIC NO. 29906

TO PREVENT HEAVY OIL COMBUSTION GAS FROM PRODUCING BLACK SMOKE.
12213 APTIC NO. 29930

FIRST RESULTS WITH THE M.A.N.-EXPERIMENTAL GAS TURBINE FOR COMMERCIAL VEHICLES.
12131 APTIC NO. 30088

EXHAUST GAS EVALUATION BY AIR RATIO COEFFICIENTS.
12278 APTIC NO. 29638

EFFECTS OF ATMOSPHERIC CONDITIONS ON AUTOMOBILE EXHAUST GAS COMPOSITIONS.
12461 APTIC NO. 29893

A STUDY OF THE CONVERSION OF SO2 TO SO3.
12623 APTIC NO. 30022

AIRCRAFT

EMISSION OF AIR POLLUTANTS FROM AIRCRAFT JET ENGINES.
12035 APTIC NO. 29734

JET AIRCRAFT AIR POLLUTANT PRODUCTION AND DISPERSION.
12016 APTIC NO. 30130

LAW-MAKERS SAY: CLEAN UP OR SHUT DOWN.
12055 APTIC NO. 29628

QUANTITATIVE ALDEHYDE DETERMINATION IN THE AIR OF WORKING PLACES.
12317 APTIC NO. 30023

THE PREVENTION OF POLLUTION.
12416 APTIC NO. 29623

SCAVENGING OF TRACER IN SEVERE STORMS.
12417 APTIC NO. 29691

CALCULATION OF A JET AXIS IN A DRIFTING FLOW.
12507 APTIC NO. 30042

AIRPORTS

EMISSION OF AIR POLLUTANTS FROM AIRCRAFT JET ENGINES.
12035 APTIC NO. 29734

ALABAMA

MEASUREMENT OF ATMOSPHERIC LEVELS OF PESTICIDES.
12392 APTIC NO. 29812

ALCOHOLS

DEVELOPMENT OF A METHOD FOR DETERMINING SULPHUR OXIDES IN FLUE GASES.
12265 APTIC NO. 30084

COLLECTION OF LEGISLATIONS RELATED WITH MITI CONCERNING POLLUTIONS.
12646 APTIC NO. 29504

ALDEHYDES

AIR POLLUTANTS GENERATED IN INTRA-FURNACE COMBUSTION.
12020 APTIC NO. 29532

AIR POLLUTION BY NITRIC OXIDE FROM FERTILIZER FACTORIES.
12051 APTIC NO. 29568

PROBLEMS OF PUBLIC NUISANCE CAUSED BY BAD ODORS IN HYOGO PREFECTURE.
12029 APTIC NO. 29599

ATMOSPHERIC POLLUTION IN HEADINGS FOLLOWING SHOTFIRING.
12024 APTIC NO. 29678

EXHAUST GAS CLEANER FOR DIESEL ENGINES.
12221 APTIC NO. 29533

FUTURE OF GASOLINE WITH LEAD ANTIKNOCKS.
12243 APTIC NO. 29625

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

WASTE GAS RECIRCULATION IN COMBUSTION ENGINES, PRIMARILY DIESEL ENGINES.
12181 APTIC NO. 29962

COMBUSTION OF WASTES CENTERING AROUND REMOVAL OF NOXIOUS GAS.
12077 APTIC NO. 29985

CONTROL OF POLLUTANT EMISSION AND SULPHURIC ACID CORROSION FROM COMBUSTION OF RESIDUAL FUEL OIL. PART I: LOW-PRESSURE HEATING BOILERS WITH MECHANICAL ATOMIZING BURNERS.
12164 APTIC NO. 30055

ANALYSIS OF MONOETHANOLAMIN IN THE AIR.
12339 APTIC NO. 29970

QUANTITATIVE ALDEHYDE DETERMINATION IN THE AIR OF WORKING PLACES.
12317 APTIC NO. 30023

PHOTOCHEMICAL SMOG AND ITS REACTION MECHANISM.
12459 APTIC NO. 29934

PHOTOCHEMICAL REACTIONS OF MOTOR VEHICLE EXHAUST GASES.
12402 APTIC NO. 29960

A FEW OBSERVATION ON THE GENERATION MECHANISM OF OBNOXIOUS ODOR.
12517 APTIC NO. 29649

INSTRUMENT FOR STUDYING THE ACTION OF EXHAUST GASES DILUTED IN THE AIR, ON BACTERIAL, CELLULAR, AND TISSULAR CULTURES.
12476 APTIC NO. 29849

THE REACTION KINETICS OF MERCAPTAN WITH OZONE IN THE PPM RANGE.
12497 APTIC NO. 30016

THE GUIDANCE STANDARD OF THE EQUIPMENT FOR TREATING EXHAUST GASES FROM THE FACTORY (FORMALDEHYDE):APR. 1970.
12636 APTIC NO. 29756

COLLECTION OF LEGISLATIONS RELATED WITH MITI CONCERNING POLLUTIONS.
12646 APTIC NO. 29504

ALERTS

REPORT FROM THE NETHERLANDS: MEASUREMENT GRID FOR AIR POLLUTION.
12364 APTIC NO. 29798

AIR POLLUTION IN AN URBAN ENVIRONMENT.
12413 APTIC NO. 30045

ADDENDUM TO ENVIRONMENTAL POLLUTIONS IN KAWASAKI CITY.
12647 APTIC NO. 29511

MATERIALS FOR REFERENCE ABOUT ENVIRONMENTAL POLLUTION CONTROL.
12651 APTIC NO. 29818

LEGAL ASPECTS OF AIR POLLUTION IN BELGIUM AND OTHER NEIGHBORING COUNTRIES.
12659 APTIC NO. 30040

ALKALINE ADDITIVES

BASIC RESEARCH ON SMOKE DESULFURIZATION BY LIME-METALS, 2ND REPORT - EFFECT OF METAL ADDITION ON CALCINATION OF LIME.
12153 APTIC NO. 29080

BASIC RESEARCH ON SMOKE DESULFURIZATION BY LIME-METALS, 1ST REPORT - DESULFURIZATION EFFECT BY ADDITION OF METAL.
12154 APTIC NO. 29478

STUDY ON MECHANISM OF REACTION WITH SULFUR DIOXIDE OF LIMESTONE POWDER BLOWN INTO COMBUSTION GAS.
12146 APTIC NO. 29479

SMELTER POLLUTION CONTROL--FACTS AND PROBLEMS.
12076 APTIC NO. 29622

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

SEPARATION OF CO2 AND H2S FROM GAS MIXTURES.
12086 APTIC NO. 29752

ALKALI AND HEAT RECOVERY IN THE FLUE GASES FROM RECOVERY BOILERS.
12193 APTIC NO. 29852

STUDIES ON AIR POLLUTION CONTROL BY ADDITIVE INJECTION. PART II - PREVENTION OF CLOGGING AT HIGH TEMPERATURE HEATING SURFACE OF BOILER BY ADDING MG(OH)2 POWDER.
12075 APTIC NO. 29941

DESULFURIZATION OF WASTE GASES AND FUELS.
12205 APTIC NO. 29957

STUDY ON THE DESULFURIZATION OF FLUE GAS BY THE USE OF DRY LIME.
12198 APTIC NO. 29972

THE SCRUBBING OF TAIL GAS FROM SULFURIC ACID PLANTS.
12067 APTIC NO. 30096

REDUCING SO2 EMISSION FROM STATIONARY SOURCES.
12098 APTIC NO. 30102

STUDY ON DESULFURIZATION BY THE INJECTION OF LIMESTONE POWDER INTO FURNACE OF OIL FIRING BOILER (PART I).
12145 APTIC NO. 30131

NO-X CONTROL FROM STATIONARY SOURCES.
12427 APTIC NO. 29764

INDUSTRIAL REACTION TO SULPHUR DIOXIDE CONTROL EQUIPMENT AND STANDARDS.
12637 APTIC NO. 29604

ALKALIZED ALUMINA (ADSORP

DESULFURIZATION OF WASTE GASES AND FUELS.
12205 APTIC NO. 29957

KINETICS OF RECOVERING SULFUR FROM THE SPENT SEED IN AN MHD POWER PLANT.
12118 APTIC NO. 30048

REDUCING SO2 EMISSION FROM STATIONARY SOURCES.
12098 APTIC NO. 30102

ALLERGIES

STUDIES OF VENTILATORY MEASURES INDOORS AGAINST POLLEN ALLERGY.
12116 APTIC NO. 30011

THE RESEARCH FOR THE EFFECTS OF AIR POLLUTION ON THE HUMAN BODY. (II) THE RELATIONSHIP BETWEEN ASTHMA-LIKE DISEASES OF THE SCHOOL CHILDREN AND AIR POLLUTION IN KITAKYUSHU.
12524 APTIC NO. 29683

ON THE STUDY OF ALLERGIC REACTIONS IN CONNECTION WITH AIR POLLUTION IN SETTLEMENTS WITH INDUSTRIAL DISCHARGES.
12528 APTIC NO. 29981

ALUMINUM

BASIC RESEARCH ON SMOKE DESULFURIZATION BY LIME-METALS, 1ST REPORT - DESULFURIZATION EFFECT BY ADDITION OF METAL.
12154 APTIC NO. 29478

MEASUREMENT OF GASEOUS AND PARTICULATE FLUORINE EMISSIONS.
12322 APTIC NO. 29738

AIR POLLUTION.
12363 APTIC NO. 29510

ALUMINUM MATERIAL FOR THE CHEMICAL INDUSTRY.
12624 APTIC NO. 29922

THE COSTS FOR MAINTENANCE OF CLEAN AIR. THE INFLUENCE OF SOCIAL COSTS ON THE SELECTION OF AN INDUSTRIAL SITE.
12633 APTIC NO. 29923

PRESENT SITUATION OF ADMINISTRATION CONCERNING POLLUTIONS.
12648 APTIC NO. 29598

ALUMINUM COMPOUNDS

AIR POLLUTANTS GENERATED IN INTRA-FURNACE COMBUSTION.
12020 APTIC NO. 29532

NEW METHOD OF MANUFACTURING CATALYST FOR EXHAUST GAS.
12133 APTIC NO. 29733

MANUFACTURING OF INDUSTRIAL CATALYST COMPRISING ALUMINA AS CARRIER. (Arumina o tantai to shita kogyo shokubai no seizo). Text in Japanese. Preprint, Japan Industrial Technology Assoc., Tokyo, 12p., 1970. 5 refs. (Presented at the Industrial Catalyst Seminar Tokyo, Japan, Nov. 9, 1970.)
12158 APTIC NO. 29755

REMOVAL OF CHLORINE FROM GASES.
12177 APTIC NO. 29802

METHOD TO MANUFACTURE CATALYST FOR DESULFURIZATION BY HYDROGEN ADDITION OF LIQUID HYDROCARBON.
12234 APTIC NO. 29974

CATALYST FOR HEAVY OIL DESULFURIZATION.
12224 APTIC NO. 29977

CONTROL OF POLLUTANT EMISSION AND SULPHURIC ACID CORROSION FROM COMBUSTION OF RESIDUAL FUEL OIL. PART I: LOW-PRESSURE HEATING BOILERS WITH MECHANICAL ATOMIZING BURNERS.
12164 APTIC NO. 30055

DISPOSAL OF HC FROM OIL CONTAINING RESIDUAL OIL AFTER DISTILLATION USING HYDROGEN.
12162 APTIC NO. 30095

MEASUREMENT OF GASEOUS AND PARTICULATE FLUORINE EMISSIONS.
12322 APTIC NO. 29738

TRACE ELEMENTS IN ATMOSPHERIC PRECIPITATION AROUND THE OTKAZNOE RESERVOIR.
12432 APTIC NO. 29910

COMPLEX ALKALI IRON SULFATES A CONTRIBUTION TO THE THERMODYNAMICS OF FIRESIDE HIGH-TEMPERATURE CORROSION.
12616 APTIC NO. 29783

ALUMINUM OXIDES

THE EFFECT OF CATALYST POISONS ON THE ACTIVITY OF CARBON MONOXIDE SHIFT CATALYSTS.
12212 APTIC NO. 29944

CATALYST FOR HEAVY OIL DESULFURIZATION.
12224 APTIC NO. 29977

CATALYTIC REDUCTION OF SULFUR DIOXIDE ON IRON-ALUMINA BIFUNCTIONAL CATALYSTS.
12152 APTIC NO. 30064

ON A DUST-COLLECTING DEVICE FOR A FERROSILICON FURNACE.
12219 APTIC NO. 30086

EXPERIMENTAL INVESTIGATION OF THE PROCESS OF CENTRIFUGAL DUST SEPARATION.
12245 APTIC NO. 30133

ALUMINUM SILICATES

DISPOSAL OF HC FROM OIL CONTAINING RESIDUAL OIL AFTER DISTILLATION USING HYDROGEN.
12162 APTIC NO. 30095

ALVEOLI

PATHOLOGICAL STUDY ON THE EXPERIMENTAL RABBITS AT AIR-POLLUTED AREA IN YOKKAICHI.
12590 APTIC NO. 29502

EFFECTS OF LOW CARBON MONOXIDE CONCENTRATIONS IN MAN.
12533 APTIC NO. 29609

AMINES

PROBLEMS OF PUBLIC NUISANCE CAUSED BY BAD ODORS IN HYOGO PREFECTURE.
12029 APTIC NO. 29599

SOME PROBLEMS ON THE OFFENSIVE ODOR IN HYOGO PREFECTURE.
12030 APTIC NO. 29842

PROBLEM OF OBNOXIOUS ODOR IN INDUSTRIAL POLLUTIONS.
12202 APTIC NO. 29745

METHOD TO MANUFACTURE CATALYST FOR DESULFURIZATION BY HYDROGEN ADDITION OF LIQUID HYDROCARBON.
12234 APTIC NO. 29974

ON THE REACTIVITY OF AMINES WITH OZONE.
12190 APTIC NO. 29978

ON THE EFFECT OF ACCOMPANYING GASES IN QUANTITATIVE ANALYSIS OF HYDROGEN SULFIDE USING METHYLENE BLUE.
12343 APTIC NO. 29505

JIS ANALYTICAL PROCESS FOR NITROGEN OXIDES IN WASTE GAS.
12355 APTIC NO. 29677

ON MEASUREMENT OF ODOR.
12256 APTIC NO. 29726

ANALYSIS OF MONOETHANOLAMIN IN THE AIR.
12339 APTIC NO. 29970

A FEW OBSERVATION ON THE GENERATION MECHANISM OF OBNOXIOUS ODOR.
12517 APTIC NO. 29649

SIMULTANEOUS ABSORPTION OF TWO GASES ACCOMPANIED BY REVERSIBLE INSTANTANEOUS CHEMICAL REACTIONS.
12504 APTIC NO. 29917

AMINO ACIDS

A FINDING CONCERNING A BASIC INVESTIGATION METHOD ON ODOR POLLUTION SEEN FROM ACTUAL EXPERIENCE. REPORT NO. 2 ON THE STUDIES OF OBNOXIOUS ODOR.
12294 APTIC NO. 29508

A FEW OBSERVATION ON THE GENERATION MECHANISM OF OBNOXIOUS ODOR.
12517 APTIC NO. 29649

FOUR-ALKYL LEAD AND ENVIRONMENTAL POLLUTION.
12588 APTIC NO. 29825

AMMONIA

AIR POLLUTION BY NITRIC OXIDE FROM FERTILIZER FACTORIES.
12051 APTIC NO. 29568

PROBLEMS OF PUBLIC NUISANCE CAUSED BY BAD ODORS IN HYOGO PREFECTURE.
12029 APTIC NO. 29599

AMMONIA DISPOSAL--COKE PLANTS.
12012 APTIC NO. 29627

THE NEW PLANT FOR PRODUCTION OF SULFUR DIOXIDE AT LEVERKUSEN.
12203 APTIC NO. 29577

DESULFURIZATION OF EXHAUST GAS.
12078 APTIC NO. 29927

RESISTANCE OF PHASES INVOLVED IN MASS TRANSFER DURING ABSORPTION OF A READILY SOLUBLE GAS IN A VENTURI SCRUBBER.
12188 APTIC NO. 29968

ON THE REACTIVITY OF AMINES WITH OZONE.
12190 APTIC NO. 29978

ELIMINATION OF OXIDES CONTAINED IN CERTAIN RESIDUAL INDUSTRIAL GASES.
12129 APTIC NO. 30043

A GAS ANALYSER FOR THE MEASUREMENT OF IMPURITIES IN AIR.
12277 APTIC NO. 29581

ON MEASUREMENT OF ODOR.
12256 APTIC NO. 29726

POLLUTIONS AND TOKYO METROPOLITAN GOVERNMENT.
12365 APTIC NO. 29973

ATMOSPHERIC REACTIONS AND SCAVENGING PROCESSES.
12426 APTIC NO. 29774

FORMATION OF PARTICLES BY PHOTOLYSIS AND RADIOLYSIS.
12407 APTIC NO. 29809

IGNITION KINTICS IN HIGH-TEMPERATURE OXIDATION WITH NITROUS OXIDE IN SHOCK WAVES.
12509 APTIC NO. 29095

A FEW OBSERVATION ON THE GENERATION MECHANISM OF OBNOXIOUS ODOR.
12517 APTIC NO. 29649

RATES OF ENERGY TRANSFER FROM N2 A CUBED SIGMA(+) U TO VARIOUS MOLECULES. INITIAL AND FINAL QUANTUM STATES IN THE TRANSFER TO NOX SQUARED PI AND HG(6 1S SUB O), AND VIBRATIONAL RELAXATION OF N2 A CUBED SIGMA(+) U (V EQUALS 1) IN HELIUM.
12481 APTIC NO. 29750

THE ABSORPTION COEFFICIENT OF A GASEOUS SUBSTANCE ON A SWARMING FILM.
12479 APTIC NO. 29994

EFFECT OF LONG-TERM JOINT ACTION OF CARBON MONOXIDE, NITROGEN DIOXIDE AND AMMONIUM ON REQUIREMENTS OF ALBINO RATS IN VITAMIN B6.
12572 APTIC NO. 29753

COLLECTION OF LEGISLATIONS RELATED WITH MITI CONCERNING POLLUTIONS.
12646 APTIC NO. 29504

MATERIALS FOR REFERENCE ABOUT ENVIRONMENTAL POLLUTION CONTROL.
12651 APTIC NO. 29818

AMMONIUM CHLORIDE

METHOD TO ARREST AND REMOVE WHITE SMOKE PRODUCED FROM MOLTEN ZINC PLATING PROCESS.
12135 APTIC NO. 29940

JIS ANALYTICAL PROCESS FOR NITROGEN OXIDES IN WASTE GAS.
12355 APTIC NO. 29677

PARTICLE SIZE DISTRIBUTION IN AEROSOLS FORMED FROM GASEOUS REACTANTS.
12268 APTIC NO. 29854

AMMONIUM COMPOUNDS

AIR POLLUTION BY NITRIC OXIDE FROM FERTILIZER FACTORIES.
12051 APTIC NO. 29568

PROBLEMS OF PUBLIC NUISANCE CAUSED BY BAD ODORS IN HYOGO PREFECTURE.
12029 APTIC NO. 29599

AMMONIA DISPOSAL--COKE PLANTS.
12012 APTIC NO. 29627

SOME PROBLEMS ON THE OFFENSIVE ODOR IN HYOGO PREFECTURE.
12030 APTIC NO. 29842

THE NEW PLANT FOR PRODUCTION OF SULFUR DIOXIDE AT LEVERKUSEN.
12203 APTIC NO. 29577

METHOD TO REMOVE HARMFUL SUBSTANCES FROM STACK GAS BY-PRODUCING AMMONIUM SULFATE AND OTHERS (XV) - ACTIVATION ENERGY OF ACTIVATED CARBON FOR SO2 ADSORPTION.
12161 APTIC NO. 29648

DESULFURIZATION OF EXHAUST GAS.
12078 APTIC NO. 29927

CONTACT HYDRODESULFURIZATION OF PETROLEUM RESIDUAL OIL.
12200 APTIC NO. 29932

METHOD TO ARREST AND REMOVE WHITE SMOKE PRODUCED FROM MOLTEN ZINC PLATING PROCESS.
12135 APTIC NO. 29940

RESISTANCE OF PHASES INVOLVED IN MASS TRANSFER DURING ABSORPTION OF A READILY SOLUBLE GAS IN A VENTURI SCRUBBER.
12188 APTIC NO. 29968

ON THE REACTIVITY OF AMINES WITH OZONE.
12190 APTIC NO. 29978

ELIMINATION OF OXIDES CONTAINED IN CERTAIN RESIDUAL INDUSTRIAL GASES.
12129 APTIC NO. 30043

THE SCRUBBING OF TAIL GAS FROM SULFURIC ACID PLANTS.
12067 APTIC NO. 30096

A GAS ANALYSER FOR THE MEASUREMENT OF IMPURITIES IN AIR.
12277 APTIC NO. 29581

JIS ANALYTICAL PROCESS FOR NITROGEN OXIDES IN WASTE GAS.
12355 APTIC NO. 29677

ON MEASUREMENT OF ODOR.
12256 APTIC NO. 29726

PARTICLE SIZE DISTRIBUTION IN AEROSOLS FORMED FROM GASEOUS REACTANTS.
12268 APTIC NO. 29854

POLLUTIONS AND TOKYO METROPOLITAN GOVERNMENT.
12365 APTIC NO. 29973

ATMOSPHERIC REACTIONS AND SCAVENGING PROCESSES.
12426 APTIC NO. 29774

FORMATION OF PARTICLES BY PHOTOLYSIS AND RADIOLYSIS.
12407 APTIC NO. 29809

BORDEAUX. STUDY OF ATMOSPHERIC POLLUTION IN THE BUILT-UP AREA.
12420 APTIC NO. 30109

IGNITION KINTICS IN HIGH-TEMPERATURE OXIDATION WITH NITROUS OXIDE IN SHOCK WAVES.
12509 APTIC NO. 29095

A FEW OBSERVATION ON THE GENERATION MECHANISM OF OBNOXIOUS ODOR.
12517 APTIC NO. 29649

RATES OF ENERGY TRANSFER FROM N2 A CUBED SIGMA(+) U TO VARIOUS MOLECULES. INITIAL AND FINAL QUANTUM STATES IN THE TRANSFER TO NOX SQUARED PI AND HG(6 1S SUB O), AND VIBRATIONAL RELAXATION OF N2 A CUBED SIGMA(+) U (V EQUALS 1) IN HELIUM.
12481 APTIC NO. 29750

THE ABSORPTION COEFFICIENT OF A GASEOUS SUBSTANCE ON A SWARMING FILM.
12479 APTIC NO. 29994

EFFECT OF LONG-TERM JOINT ACTION OF CARBON MONOXIDE, NITROGEN DIOXIDE AND AMMONIUM ON REQUIREMENTS OF ALBINO RATS IN VITAMIN B6.
12572 APTIC NO. 29753

COLLECTION OF LEGISLATIONS RELATED WITH MITI CONCERNING POLLUTIONS.
12646 APTIC NO. 29504

MATERIALS FOR REFERENCE ABOUT ENVIRONMENTAL POLLUTION CONTROL.
12651 APTIC NO. 29818

ANNUAL

MERCURY IN THE AIR.
12362 APTIC NO. 29490

AIR POLLUTION.
12363 APTIC NO. 29510

STUDY OF THE SUSPENDED PARTICULATES AND LEAD CONCENTRATION IN THE AIR WITHIN THE CITY LIMITS OF MAGDEBURG.
12382 APTIC NO. 29515

STATISTICAL ANALYSES OF AIR POLLUTION SAMPLING FREQUENCY IN AN EPIDEMIOLOGIC STUDY.
12378 APTIC NO. 29655

POLLUTIONS AND TOKYO METROPOLITAN GOVERNMENT.
12365 APTIC NO. 29973

SEASONAL VARIATION OF THE CONCENTRATION OF HEAVY METALS IN SUSPENDED DUST ON THE MAIN STREETS.
12384 APTIC NO. 30025

THE TENDENCY OF AIR POLLUTION AT NAGOYA CITY OBSERVED FROM THE WEIGHT OF FALLING DUST.
12396 APTIC NO. 30076

EVOLUTION OF THE ATMOSPHERIC CONTAMINATION IN MADRID IN 1969.
12371 APTIC NO. 30089

DISSIPATION AND PRECIPITATION OF DUST EMITTED BY A STEELWORKS.
12466 APTIC NO. 29829

AIR POLLUTION IN AN URBAN ENVIRONMENT.
12413 APTIC NO. 30045

THE RESEARCH FOR THE EFFECTS OF AIR POLLUTION ON THE HUMAN BODY. (II) THE RELATIONSHIP BETWEEN ASTHMA-LIKE DISEASES OF THE SCHOOL CHILDREN AND AIR POLLUTION IN KITAKYUSHU.
12524 APTIC NO. 29683

AIR POLLUTION AND ATMOSPHERIC CORROSION.
12613 APTIC NO. 29222

ATMOSPHERIC CORROSION OF THE ELECTROLYTIC NI-CR COATINGS.
12609 APTIC NO. 30039

STANDARDS OF AIR POLLUTION.
12643 APTIC NO. 29776

LONG RANGE PLANNING IN AIR RESOURCE MANAGEMENT.
12657 APTIC NO. 30056

ANTIDOTES

THE ROLE OF AIR POLLUTION ON CHRONIC OBSTRUCTIVE PULMONARY DISEASE.
12539 APTIC NO. 30136

AREA EMISSION ALLOCATIONS

A METHOD FOR OPTIMIZING POLLUTANT EMISSIONS IN AN AIRSHED.
12448 APTIC NO. 29903

ON THE BASIC LAW FOR ENVIRONMENTAL POLLUTION CONTROL, NOISE CONTROL LAW, WATER POLLUTION PREVENTION LAW, AND AIR POLLUTION PREVENTION LAW.
12670 APTIC NO. 29509

LONG RANGE PLANNING IN AIR RESOURCE MANAGEMENT.
12657 APTIC NO. 30056

AREA SURVEYS

A PROGRAM TO SAMPLE AND ANALYZE AIR POLLUTION IN THE VICINITY OF A CHEMICAL RECLAMATION PLANT.
12039 APTIC NO. 29698

MERCURY IN THE AIR.
12362 APTIC NO. 29490

POLLUTIONS AND TOKYO METROPOLITAN GOVERNMENT.
12365 APTIC NO. 29973

CONCASTER, AN AREA STUDY.
12366 APTIC NO. 30047

THE TENDENCY OF AIR POLLUTION AT NAGOYA CITY OBSERVED FROM THE WEIGHT OF FALLING DUST.
12396 APTIC NO. 30076

DISTRIBUTION OF POLLUTION AT SOME COUNTRY SITES.
12425 APTIC NO. 29582

NEW EYE ON THE AIR.
12412 APTIC NO. 29644

DISSIPATION OF SO2 GENERATED IN A STEELWORK INTO THE GROUND LAYER OF THE ATMOSPHERE.
12467 APTIC NO. 29867

ITAI-ITAI (OUCH-OUCH) DISEASE AND CADMIUM POLLUTION IN JAPAN.
12581 APTIC NO. 29673

STUDY ON THE EFFECTS OF AIR POLLUTION ON HUMAN BODY--WITH SPECIAL REFERENCE TO OBJECTIVE, COMPARATIVE STUDY OF ALL THE INHABITANTS BY CHEST X-RAY RINDINGS.
12554 APTIC NO. 29904

THE TASKS OF THE PUBLIC HEALTH SYSTEM IN THE FIELD OF THE HYGIENE OF THE AIR IN THE PEOPLE S REPUBLIC OF HUNGARY.
12667 APTIC NO. 29592

PRESENT SITUATION OF ADMINISTRATION CONCERNING POLLUTIONS.
12648 APTIC NO. 29598

CHIBA PREFECTURAL ORDINANCE ON POLLUTIONS CONTROL AND ENFORCEMENT REGULATION OF ORDINANCE.
12649 APTIC NO. 29679

POLLUTIONS PREVENTION PLAN FOR CHIBA AND ICHIHARA CITIES IN CHIBA PREFECTURE.
12650 APTIC NO. 29813

LEGAL ASPECTS OF AIR POLLUTION IN BELGIUM AND OTHER NEIGHBORING COUNTRIES.
12659 APTIC NO. 30040

LONG RANGE PLANNING IN AIR RESOURCE MANAGEMENT.
12657 APTIC NO. 30056

AROMATIC FRACTIONS

BENZPYRENE AND OTHER AROMATIC HYDROCARBONS IN THE DUST OF POLISH TOWNS.
12385 APTIC NO. 29569

THE PRESENT RESULTS OF DETERMINATIONS OF 3,4-BENZPYRENE IN THE AIR OVER BUDAPEST.
12631 APTIC NO. 29590

ARSENIC COMPOUNDS

ON HYGIENIC AND TOXICOLOGICAL PROBLEMS OF POLLUTION BY ARSENIC.
12534 APTIC NO. 29587

THE INFLUENCE OF AIR POLLUTION ON PUBLIC HEALTH.
12586 APTIC NO. 29589

COMPLEX ALKALI IRON SULFATES A CONTRIBUTION TO THE THERMODYNAMICS OF FIRESDIDE HIGH-TEMPERATURE CORROSION.
12616 APTIC NO. 29783

ARTIFICIAL RESPIRATION

PATIENT ADVICE DURING ACUTE AIR POLLUTION EPISODE.
12531 APTIC NO. 29878

ASBESTOS

DETERMINATION OF IRON, CHROMIUM, COBALT, NICKEL, AND SCANDIUM IN ASBESTOS BY NEUTRON ACTIVATION ANALYSIS.
12292 APTIC NO. 30129

PROGRESS REPORT. JANUARY-DECEMBER 1969.
12555 APTIC NO. 28850

PULMONARY COMPLICATIONS OF ASBESTOS EXPOSURE.
12552 APTIC NO. 29221

ASBESTOSIS

THE ROLE OF TRACE METALS IN CHEMICAL CARCINOGENESIS: ASBESTOS CANCERS.
12543 APTIC NO. 29993

ASHES

DESULFURIZATION OF EXHAUST GAS.
12078 APTIC NO. 29927

JOINT DEMONSTRATION OF METHODS FOR EXTINGUISHMENT AND CONTROL OF BURNING COAL REFUSE PILES. (FINAL REPORT).
12066 APTIC NO. 30057

A MATHEMATICAL MODEL FOR MEASURING MASS/NUMBER INDEX OF RESPIRABLE AIRBORNE COAL DUST.
12258 APTIC NO. 30081

BORDEAUX. STUDY OF ATMOSPHERIC POLLUTION IN THE BUILT-UP AREA.
12420 APTIC NO. 30109

VALUE ANALYSIS OF COAL.
12629 APTIC NO. 30122

ATMOSPHERIC POLLUTANTS FRENCH LEGISLATION. STANDARD MEASURING METHODS. RECENT COMMERCIAL APPARATUS.
12638 APTIC NO. 29003

ASPHALT

POLLUTION CONTROL SYSTEMS FOR ASPHALT PLANTS.
12233 APTIC NO. 29492

ASPIRATORS

AN ASPIRATION INSTALLATION OF HIGH EFFICIENCY FOR COLLECTING SAMPLES OF RADIOACTIVE AEROSOLS FROM THE ATMOSPHERE.
12318 APTIC NO. 29670

DETERMINATION OF THE SOOT INDEX IN WASTE GASES OF OIL BURNERS.
12257 APTIC NO. 29749

ASTHMA

REPORT FOR THE INVESTIGATION ON THE METHOD OF SO2 TEST.
12301 APTIC NO. 29381

AIR POLLUTION.
12363 APTIC NO. 29510

RAPID ASSESSMENT OF TESTS OF POLLUTANT EFFECTS IN MAN.
12536 APTIC NO. 29431

PATHOLOGICAL STUDY ON THE EXPERIMENTAL RABBITS AT AIR-POLLUTED AREA IN YOKKAICHI.
12590 APTIC NO. 29502

THE RESEARCH FOR THE EFFECTS OF AIR POLLUTION ON THE HUMAN BODY. (II) THE RELATIONSHIP BETWEEN ASTHMA-LIKE DISEASES OF THE SCHOOL CHILDREN AND AIR POLLUTION IN KITAKYUSHU.
12524 APTIC NO. 29683

STUDIES ON AIR POLLUTION AND BRONCHIAL ASTHMA. REPORT 1.
12548 APTIC NO. 29925

ATMOSPHERIC MOVEMENTS

PROBLEMS OF PUBLIC NUISANCE CAUSED BY BAD ODORS IN HYOGO PREFECTURE.
12029 APTIC NO. 29599

INVESTIGATION OF HEAVY METAL POLLUTION IN IWAKI CITY.
12007 APTIC NO. 29787

ON CONDITIONS FOR PROPER USE OF ACTIVATED CARBON AS AN AIR PURIFICATION AGENT (2) - ITS EFFICIENCY FOR REMOVAL OF SO2 GAS.
12113 APTIC NO. 29496

DEVELOPMENT OF A METEOROLOGICALLY CONTROLLED AGRICULTURAL BURNING PROGRAM.
12058 APTIC NO. 29724

REPORT ON THE INVESTIGATION INTO THE MAINTENANCE AND THE SUPERVISION OF AIR-CLEANING APPARATUS AS AN INDICATION OF AIR POLLUTION.
12122 APTIC NO. 29840

REPORT FOR THE INVESTIGATION ON THE METHOD OF SO2 TEST.
12301 APTIC NO. 29381

A MEASUREMENT GRID FOR AIR POLLUTION IN THE MOUTH OF THE RIVER RHINE IN ROTTERDAM.
12333 APTIC NO. 29460

SIMPLIFIED TECHNIQUES IN AIR POLLUTION MEASUREMENT.
12289 APTIC NO. 29771

A COMPREHENSIVE SAMPLING SYSTEM FOR STUDYING THE RELATION BETWEEN VISIBILITY, METEOROLOGICAL PARAMETERS AND ATMOSPHERIC POLLUTION.
12276 APTIC NO. 30082

ANALYSIS OF HC OF LOW GRADE IN ATMOSPHERE.
12391 APTIC NO. 29482

THE 3,4-BENZPYRENE CONTENT OF THE AIR IN TWO INDUSTRIAL AREAS.
12400 APTIC NO. 29586

STATISTICAL ANALYSES OF AIR POLLUTION SAMPLING FREQUENCY IN AN EPIDEMIOLOGIC STUDY.
12378 APTIC NO. 29655

REPORT FROM THE NETHERLANDS: MEASUREMENT GRID FOR AIR POLLUTION.
12364 APTIC NO. 29798

LEAD CONCENTRATION IN YOKOHAMA AIR.
12399 APTIC NO. 29814

REGISTRATION OF THE SULPHUR DIOXIDE CONTENT OF THE AIR IN BUDAPEST.
12394 APTIC NO. 29868

A STUDY OF AIR POLLUTION AROUND A SULPHURIC ACID PLANT.
12374 APTIC NO. 29883

ON AIR POLLUTION IN MIZUSHIMA AREA.
12390 APTIC NO. 29895

STUDIES ON AIR POLLUTION DUE TO AUTOMOBILE EXHAUST. REPORT 15: AIR POLLUTION AT THE VICINITY OF BOOTHS IN MEISHIN HIGHWAY.
12389 APTIC NO. 30075

DISTRIBUTION OF POLLUTION AT SOME COUNTRY SITES.
12425 APTIC NO. 29582

GASEOUS PLUME DIFFUSION ABOUT ISOLATED STRUCTURES OF SIMPLE GEOMETRY. (ANNUAL PROGRESS REPORT).
12438 APTIC NO. 29584

SCAVENGING OF TRACER IN SEVERE STORMS.
12417 APTIC NO. 29691

EPISODE 104.
12410 APTIC NO. 29695

ATMOSPHERIC DISPERSION OF STACK EFFLUENTS.
12458 APTIC NO. 29773

AIR POLLUTION CONTROL SYSTEM (3).
12401 APTIC NO. 29795

ESTIMATION OF GROUND LEVEL CONCENTRATION BY SMOKE-DIFFUSION WIND TUNNELS.
12462 APTIC NO. 29820

TURBULENT DIFFUSION THEORY TAKING TURBULENT BOUNDARY LAYER INTO CONSIDERATION.
12463 APTIC NO. 29822

A NUMERICAL EXPERIMENT IN SIMULATING THE TRANSPORT OF SULFUR DIOXIDE THROUGH THE ATMOSPHERE.
12446 APTIC NO. 29952

DISCUSSIONS DEPTH OF THE BOUNDARY LAYER.
ERROR

PLUME RISE: A RECENT CRITICAL REVIEW.
12408 APTIC NO. 30068

ON PLUMBIC POLLUTION OF MUNICIPAL ATMOSPHERE--BEHAVIORS OF PLUMBIC COMPOUND AS AEROSOL.
12431 APTIC NO. 30073

EXPERIMENTS WITH A REGIONAL FINE-MESH PREDICTION MODEL.
12465 APTIC NO. 30107

ON THE RELATIONSHIP BETWEEN AIR POLLUTION AND MORBIDITY AND MORTALITY OF THE POPULATION IN POLISH TOWNS.
12563 APTIC NO. 29575

PATIENT ADVICE DURING ACUTE AIR POLLUTION EPISODE.
12531 APTIC NO. 29878

STANDARD FADING CLOTHES FOR OXIDANTS.
12619 APTIC NO. 29866

STANDARDS OF AIR POLLUTION.
12643 APTIC NO. 29776

POLLUTIONS PREVENTION PLAN FOR CHIBA AND ICHIHARA CITIES IN CHIBA PREFECTURE.
12650 APTIC NO. 29813

ATTACK RATES

STUDIES ON AIR POLLUTION AND BRONCHIAL ASTHMA. REPORT 1.
12548 APTIC NO. 29925

AUSTRALIA

DISCUSSIONS DEPTH OF THE BOUNDARY LAYER.
ERROR

ATMOSPHERIC CARBON DIOXIDE AND THE BIOSPHERE.
12593 APTIC NO. 30078

AUTOMATIC METHODS

MEASURING METHOD OF OZONE BY CHEMILUMINECENCE.
12337 APTIC NO. 29665

MEASUREMENT OF GASEOUS AND PARTICULATE FLUORINE EMISSIONS.
12322 APTIC NO. 29738

PROGRESS IN MEASUREMENT OF AIR POLLUTION.
12350 APTIC NO. 29748

AN AUTOMATIC COULOMETRIC ANALYZER OF OZONE IN THE ATMOSPHERE.
12274 APTIC NO. 29757

SIMPLIFIED TECHNIQUES IN AIR POLLUTION MEASUREMENT.
12289 APTIC NO. 29771

METHODS OF DETERMINING SULFUR DIOXIDE (REVIEW).
12305 APTIC NO. 29801

ENVIRONMENTAL POLLUTION AND ITS MEASUREMENTS (II).
12338 APTIC NO. 29843

AUTOMATIC MEASURING APPARATUS OF FLUORIDE GASSES IN AIR.
12299 APTIC NO. 29966

A COMPREHENSIVE SAMPLING SYSTEM FOR STUDYING THE RELATION BETWEEN VISIBILITY, METEOROLOGICAL PARAMETERS AND ATMOSPHERIC POLLUTION.
12276 APTIC NO. 30082

SOURCE SAMPLING OF ATMOSPHERIC CONTAMINANTS.
12248 APTIC NO. 30118

POLLUTIONS AND TOKYO METROPOLITAN GOVERNMENT.
12365 APTIC NO. 29973

AUTOMATIC SEQUENTIAL RAIN SAMPLER FOR SCAVENGING STUDIES.
12423 APTIC NO. 29741

SEMI-AUTOMATIC DETERMINATION OF LEAD IN WIDE BLOOD.
12565 APTIC NO. 29663

NOBODY BREATHES FRESH AIR. FACTS AND ARGUMENTS ABOUT AIR POLLUTION.
12677 APTIC NO. 29459

AUTOMOBILES

OIL REFINERS PREPARE FOR ANIT-POLLUTION CONTROLS.
12040 APTIC NO. 29127

A NATIONAL ESTIMATE OF PUBLIC AND INDUSTRIAL HEAT REJECTION REQUIREMENTS BY DECADES THROUGH THE YEAR 2000 AD.
12018 APTIC NO. 29272

BUS AND VEHICLE FOR TRANSPORTATION WITH ELECTRIC DRIVE.
11987 APTIC NO. 29517

DETERMINATION OF LEAD CONTENTS IN AUTOMOBILE EXHAUST GAS.
12013 APTIC NO. 29661

EMISSION OF AIR POLLUTANTS FROM AIRCRAFT JET ENGINES.
12035 APTIC NO. 29734

WHY LEAD IN GASOLINE? THE EFFECT OF LEAD CONTAINING ANTI-KNOCK AGENTS FOR OTTO ENGINE FUELS.
11995 APTIC NO. 29782

PHYSICAL-CHEMICAL PROBLEMS OF AIR POLLUTION.
11996 APTIC NO. 29786

AMAZING HOT-GAS ENGINE POWERS CLEAN-AIR BUS.
12037 APTIC NO. 29876

FUEL VAPOR ADSORBING APPARATUS.
12103 APTIC NO. 27562

UTILIZATION OF CATALYST IN AIR POLLUTION CONTROL (4).
12239 APTIC NO. 29477

THE AUTOMOBILE AND AIR POLLUTION.
12186 APTIC NO. 29633

AN EXPERIMENT ON VALVE RECESSION BY NON-LEADED GASOLINE.
12222 APTIC NO. 29656

UTILIZATION OF CATALYST IN AIR POLLUTION CONTROL (5).
12240 APTIC NO. 29898

CONTROL OF EXHAUST GAS EMISSION OF MITSUBISHI COLT GALANT.
12228 APTIC NO. 29901

STUDY ON AUTO EXHAUST.
12241 APTIC NO. 29909

JIS ANALYTICAL PROCESS FOR NITROGEN OXIDES IN WASTE GAS.
12355 APTIC NO. 29677

STATISTICAL ANALYSES OF AIR POLLUTION SAMPLING FREQUENCY IN AN EPIDEMIOLOGIC STUDY.
12378 APTIC NO. 29655

TEN YEARS OF AIR POLLUTION IN HOKKAIDO.
12367 APTIC NO. 29727

URBAN POLLUTION BY AUTOMOBILE EXHAUST GAS.
12387 APTIC NO. 29744

POLLUTIONS AND TOKYO METROPOLITAN GOVERNMENT.
12365 APTIC NO. 29973

STUDIES ON AIR POLLUTION DUE TO AUTOMOBILE EXHAUST. REPORT 15: AIR POLLUTION AT THE VICINITY OF BOOTHS IN MEISHIN HIGHWAY.
12389 APTIC NO. 30075

AIR POLLUTION IN AN URBAN ENVIRONMENT.
12413 APTIC NO. 30045

ON PLUMBIC POLLUTION OF MUNICIPAL ATMOSPHERE--BEHAVIORS OF PLUMBIC COMPOUND AS AEROSOL.
12431 APTIC NO. 30073

BORDEAUX. STUDY OF ATMOSPHERIC POLLUTION IN THE BUILT-UP AREA.
12420 APTIC NO. 30109

LEAD MEN HEADING TOWARD DESTRUCTION--SPREADING OMINOUS METAL POLLUTIONS.
12569 APTIC NO. 29789

SOME HEALTH SURVEY RESULTS OF UNDERGROUND GARAGE WORKERS.
12568 APTIC NO. 30074

IT BEGAN WITH THE SMOG IN CALIFORNIA. CALIFORNIA TEST, EUROPEAN TEST--INTERNATIONAL REGULATIONS OF AUTOMOBILE EXHAUST GAS EMISSIONS.
12640 APTIC NO. 30069

INDUSTRIAL EMISSIONS: AN ANALYSIS OF SOME KEY FACTORS.
12669 APTIC NO. 29469

EXPANSION AND STRENGTHENING OF AIR POLLUTION CONTROL COUNTERMEASURES.
12671 APTIC NO. 29495

ON THE BASIC LAW FOR ENVIRONMENTAL POLLUTION CONTROL, NOISE CONTROL LAW, WATER POLLUTION PREVENTION LAW, AND AIR POLLUTION PREVENTION LAW.
12670 APTIC NO. 29509

LEGAL ASPECTS OF AIR POLLUTION IN BELGIUM AND OTHER NEIGHBORING COUNTRIES.
12659 APTIC NO. 30040

AUTOMOTIVE EMISSION CONTR

COMBUSTION REGULARITY A KEY TO SPARK-IGNITION ENGINE EMISSIONS REDUCTION? Preprint, Academia R. P. R., Bucharest, 15p., 1970. 4 refs. (Presented at the Internal Combustion Engines Conference, 2nd International, Bucharest (Rumania), 1970.)
12023 APTIC NO. 27641

THE EXHAUST GAS COMPOSITION AT THE FM GASOLINE ENGINE.
12046 APTIC NO. 29516

PROBLEMS OF AERATION OF THE CRANKCASE OF RECIPROCATING ENGINES WITH AN OTTO WORK CYCLE.
12009 APTIC NO. 29721

VEHICLE EMISSIONS.
12027 APTIC NO. 29894

COUNTERMEASURES ON AUTOMOBILE EXHAUST GAS.
12050 APTIC NO. 29935

TAKING ANOTHER LOOK BEFORE WE TAKE THE LEAD OUT.
11997 APTIC NO. 30067

PURIFICATION DEVICE FOR AUTOMOTIVE EXHAUST GAS.
12156 APTIC NO. 29439

REQUIEM FOR THE PISTON ENGINE? Machine Design, 42(19):20-22, 24-26, 31, 33-34, Aug. 6, 1970. 4 refs.
12226 APTIC NO. 29468

UTILIZATION OF CATALYST IN AIR POLLUTION CONTROL (4).
12239 APTIC NO. 29477

PRACTICAL ANALYTICAL METHOD OF EXHAUST REFLUX EFFECT ON NOX EMISSION CONTROL.
12102 APTIC NO. 29499

AN EXPERIMENTAL STUDY ON THE PERFORMANCE OF A MULTIFUEL ENGINE. PART 3. AN ATTEMPT OF M-COMBUSTION APPLIED TO A SWIRL CHAMBER.
12183 APTIC NO. 29520

EMISSIONS FROM INTERNAL COMBUSTION ENGINE.
12225 APTIC NO. 29531

EXHAUST GAS CLEANER FOR DIESEL ENGINES.
12221 APTIC NO. 29533

TRANSPORTATION EMISSIONS.
12175 APTIC NO. 29605

CYLINDER HEAD DESIGN.
12054 APTIC NO. 29624

EMISSION CONTROL BY EXHAUST MANIFOLD REACTOR--AN INITIAL STUDY FOR SMALL ENGINES.
12163 APTIC NO. 29629

THE AUTOMOBILE AND AIR POLLUTION.
12186 APTIC NO. 29633

AN EXPERIMENT ON VALVE RECESSION BY NON-LEADED GASOLINE.
12222 APTIC NO. 29656

EFFECTS OF THE ADDITION OF BARIUM COMPOUND ON THE SMOKE CONCENTRATION OF DIESEL EXHAUST GAS.
12057 APTIC NO. 29696

EXHAUST SYSTEM.
12165 APTIC NO. 29723

INTERNAL COMBUSTION ENGINE EXHAUST SYSTEM.
12132 APTIC NO. 29836

ALMOST POLLUTION-FREE POWERPLANTS ARE SCHEDULED FOR EARLY 1975.
12092 APTIC NO. 29856

UTILIZATION OF CATALYST IN AIR POLLUTION CONTROL (5).
12240 APTIC NO. 29898

CONTROL OF EXHAUST GAS EMISSION OF MITSUBISHI COLT GALANT.
12228 APTIC NO. 29901

EXHAUST GAS PURIFIER.
12179 APTIC NO. 29905

ATTEMPT AT A THERMODYNAMIC SOLUTION: AUTOMOBILE EXHAUST GASES.
12147 APTIC NO. 29906

STUDY ON AUTO EXHAUST.
12241 APTIC NO. 29909

EFFECTS OF WATER INJECTION IN INLET TUBE ON NO CONCENTRATION IN DIESEL EXHAUST.
12220 APTIC NO. 29911

MUFFLER FOR REMOVING PARTICULATE LEAD FROM EXHAUST GASES OF INTERNAL COMBUSTION ENGINES.
12168 APTIC NO. 29920

TO PREVENT HEAVY OIL COMBUSTION GAS FROM PRODUCING BLACK SMOKE.
12213 APTIC NO. 29930

METHOD TO MANUFACTURE CATALYST FOR CLEANING OF EXHAUST GAS FROM INTERNAL COMBUSTION ENGINES.
12150 APTIC NO. 29937

CAN ADDITIVES DECREASE DIESEL SMOKE? Power, 114(8):60, Aug. 1970.
12226 APTIC NO. 29468

WASTE GAS RECIRCULATION IN COMBUSTION ENGINES, PRIMARILY DIESEL ENGINES.
12181 APTIC NO. 29962

GASOLINE WITHOUT LEAD. TECHNICAL POSSIBILITIES FOR A NON-LEADED FUEL.
12084 APTIC NO. 30010

LAB TESTS SHOW ELECTRIC FIELD MIGHT HELP REDUCE ENGINE KNOCK.
12088 APTIC NO. 30036

FIRST RESULTS WITH THE M.A.N.-EXPERIMENTAL GAS TURBINE FOR COMMERCIAL VEHICLES.
12131 APTIC NO. 30088

EXHAUST GAS EVALUATION BY AIR RATIO COEFFICIENTS.
12278 APTIC NO. 29638

JIS ANALYTICAL PROCESS FOR NITROGEN OXIDES IN WASTE GAS.
12355 APTIC NO. 29677

POLLUTION TESTS ON IDLING GASOLINE MOTORS.
12251 APTIC NO. 29765

URBAN POLLUTION BY AUTOMOBILE EXHAUST GAS.
12387 APTIC NO. 29744

ON THE DIFFUSION OF AUTO-EXHAUSTED GASES.
12464 APTIC NO. 29850

EFFECTS OF ATMOSPHERIC CONDITIONS ON AUTOMOBILE EXHAUST GAS COMPOSITIONS.
12461 APTIC NO. 29893

A STUDY OF THE CONVERSION OF SO2 TO SO3.
12623 APTIC NO. 30022

UNLEADED GASOLINE AND SMOG-FREE AUTOS--HOW AND WHY.
12644 APTIC NO. 30035

AUTOMOTIVE EMISSIONS

COMBUSTION REGULARITY A KEY TO SPARK-IGNITION ENGINE EMISSIONS REDUCTION? Preprint, Academia R. P. R., Bucharest, 15p., 1970. 4 refs. (Presented at the Internal Combustion Engines Conference, 2nd International, Bucharest (Rumania), 1970.)
12023 APTIC NO. 27641

OIL REFINERS PREPARE FOR ANITPOLLUTION CONTROLS.
12040 APTIC NO. 29127

THE EXHAUST GAS COMPOSITION AT THE FM GASOLINE ENGINE.
12046 APTIC NO. 29516

NITROGEN OXIDES ANALYSIS.
12042 APTIC NO. 29538

DETERMINATION OF LEAD CONTENTS IN AUTOMOBILE EXHAUST GAS.
12013 APTIC NO. 29661

PROBLEMS OF AERATION OF THE CRANKCASE OF RECIPROCATING ENGINES WITH AN OTTO WORK CYCLE.
12009 APTIC NO. 29721

EMISSION OF AIR POLLUTANTS FROM AIRCRAFT JET ENGINES.
12035 APTIC NO. 29734

WHY LEAD IN GASOLINE? THE EFFECT OF LEAD CONTAINING ANTIKNOCK AGENTS FOR OTTO ENGINE FUELS.
11995 APTIC NO. 29782

PHYSICAL-CHEMICAL PROBLEMS OF AIR POLLUTION.
11996 APTIC NO. 29786

LEAD POLLUTION--A GROWING HAZARD TO PUBLIC HEALTH.
11999 APTIC NO. 29872

VEHICLE EMISSIONS.
12027 APTIC NO. 29894

THE REMOTE HEATING PLANT IN RECKLINGHAUSEN--A CONTRIBUTION TO THE PROTECTION OF THE ENVIRONMENT.
11990 APTIC NO. 29914

COUNTERMEASURES ON AUTOMOBILE EXHAUST GAS.
12050 APTIC NO. 29935

MARKET TENDENCIES FOR LEAD AND ZINC.
12003 APTIC NO. 30001

CLOSE SCRUTINY OF AUTOMOBILE EXHAUST GASES. TECHNICAL INSPECTION SERVICE FOR AUTOMOBILES IN NEW PREMISES.
12005 APTIC NO. 30002

GASOLINE, LEAD AND AIR POLLUTION.
12014 APTIC NO. 30027

TAKING ANOTHER LOOK BEFORE WE TAKE THE LEAD OUT.
11997 APTIC NO. 30067

PURIFICATION DEVICE FOR AUTOMOTIVE EXHAUST GAS.
12156 APTIC NO. 29439

UTILIZATION OF CATALYST IN AIR POLLUTION CONTROL (4).
12239 APTIC NO. 29477

PRACTICAL ANALYTICAL METHOD OF EXHAUST REFLUX EFFECT ON NOX EMISSION CONTROL.
12102 APTIC NO. 29499

EMISSIONS FROM INTERNAL COMBUSTION ENGINE.
12225 APTIC NO. 29531

EXHAUST GAS CLEANER FOR DIESEL ENGINES.
12221 APTIC NO. 29533

TRANSPORTATION EMISSIONS.
12175 APTIC NO. 29605

FUTURE OF GASOLINE WITH LEAD ANTIKNOCKS.
12243 APTIC NO. 29625

LAW-MAKERS SAY: CLEAN UP OR SHUT DOWN.
12055 APTIC NO. 29628

THE AUTOMOBILE AND AIR POLLUTION.
12186 APTIC NO. 29633

AN EXPERIMENT ON VALVE RECESSION BY NON-LEADED GASOLINE.
12222 APTIC NO. 29656

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

EFFECTS OF THE ADDITION OF BARIUM COMPOUND ON THE SMOKE CONCENTRATION OF DIESEL EXHAUST GAS.
12057 APTIC NO. 29696

EXHAUST SYSTEM.
12165 APTIC NO. 29723

NEW METHOD OF MANUFACTURING CATALYST FOR EXHAUST GAS.
12133 APTIC NO. 29733

CONTROL OF ATMOSPHERIC EMISSIONS FROM PETROLEUM STORAGE TANKS.
12063 APTIC NO. 29889

UTILIZATION OF CATALYST IN AIR POLLUTION CONTROL (5).
12240 APTIC NO. 29898

CONTROL OF EXHAUST GAS EMISSION OF MITSUBISHI COLT GALANT.
12228 APTIC NO. 29901

EXHAUST GAS PURIFIER.
12179 APTIC NO. 29905

ATTEMPT AT A THERMODYNAMIC SOLUTION: AUTOMOBILE EXHAUST GASES.
12147 APTIC NO. 29906

STUDY ON AUTO EXHAUST.
12241 APTIC NO. 29909

EFFECTS OF WATER INJECTION IN INLET TUBE ON NO CONCENTRATION IN DIESEL EXHAUST.
12220 APTIC NO. 29911

MUFFLER FOR REMOVING PARTICULATE LEAD FROM EXHAUST GASES OF INTERNAL COMBUSTION ENGINES.
12168 APTIC NO. 29920

METHOD TO MANUFACTURE CATALYST FOR CLEANING OF EXHAUST GAS FROM INTERNAL COMBUSTION ENGINES.
12150 APTIC NO. 29937

CAN ADDITIVES DECREASE DIESEL SMOKE? Power, 114(8):60, Aug. 1970.
12085 APTIC NO. 29680

WASTE GAS RECIRCULATION IN COMBUSTION ENGINES, PRIMARILY DIESEL ENGINES.
12181 APTIC NO. 29962

FIRST RESULTS WITH THE M.A.N.-EXPERIMENTAL GAS TURBINE FOR COMMERCIAL VEHICLES.
12131 APTIC NO. 30088

EXHAUST EMISSIONS FROM HEAVY DUTY VEHICLES.
12332 APTIC NO. 27631

NEW METHODS OF DETERMINING AIR POLLUTION.
12316 APTIC NO. 29595

EXHAUST GAS EVALUATION BY AIR RATIO COEFFICIENTS.
12278 APTIC NO. 29638

JIS ANALYTICAL PROCESS FOR NITROGEN OXIDES IN WASTE GAS.
12355 APTIC NO. 29677

POLLUTION TESTS ON IDLING GASOLINE MOTORS.
12251 APTIC NO. 29765

GAS CHROMATOGRAPHIC ANALYSIS OF BENZENE AND TOLUENE IN AUTOMOBILE EXHAUST GAS.
12295 APTIC NO. 29907

PIEZOLECTRIC-ELECTROSTATIC AEROSOL MASS CONCENTRATION MONITOR.
12331 APTIC NO. 30061

REPORT ON LEAD POLLUTION SURVEY.
12361 APTIC NO. 29465

AIR POLLUTION.
12363 APTIC NO. 29510

STUDY OF THE SUSPENDED PARTICULATES AND LEAD CONCENTRATION IN THE AIR WITHIN THE CITY LIMITS OF MAGDEBURG.
12382 APTIC NO. 29515

AIR POLLUTION BY EXHAUST GAS II. DETERMINATION OF LEAD AND CARBON MONOXIDE INSIDE A GARAGE AND A REPAIR FACTORY IN TOKYO CITY.
12397 APTIC NO. 29576

LEAD POLLUTION AND PHOTOCHEMICAL SMOG IN TOKYO.
12376 APTIC NO. 29647

STATISTICAL ANALYSES OF AIR POLLUTION SAMPLING FREQUENCY IN AN EPIDEMIOLOGIC STUDY.
12378 APTIC NO. 29655

TEN YEARS OF AIR POLLUTION IN HOKKAIDO.
12367 APTIC NO. 29727

URBAN POLLUTION BY AUTOMOBILE EXHAUST GAS.
12387 APTIC NO. 29744

DISTRIBUTION OF LEAD IN THE AIR NEAR CITY ROADS.
12388 APTIC NO. 29918

POLLUTIONS AND TOKYO METROPOLITAN GOVERNMENT.
12365 APTIC NO. 29973

STUDIES ON AIR POLLUTION DUE TO AUTOMOBILE EXHAUST. REPORT 15: AIR POLLUTION AT THE VICINITY OF BOOTHS IN MEISHIN HIGHWAY.
12389 APTIC NO. 30075

PROBLEMS OF AIR POLLUTION AND MEASURES TO COMBAT IT IN EL PASO, TEXAS.
12368 APTIC NO. 30094

EXPERIMENT ON PHOTOCHEMICAL REACTION OF MOTOR EXHAUST GAS.
12469 APTIC NO. 29500

THE PREVENTION OF POLLUTION.
12416 APTIC NO. 29623

PHOTOCHEMICAL SMOG.
12418 APTIC NO. 29672

EVALUATION TRIALS OF URBAN AIR POLLUTION MODELS.
12439 APTIC NO. 29697

INTERNATIONAL CONFERENCE ON CONDENSATION NUCLEI AND ICE-FORMING NUCLEI.
12454 APTIC NO. 29699

ON THE DIFFUSION OF AUTO-EXHAUSTED GASES.
12464 APTIC NO. 29850

EFFECTS OF ATMOSPHERIC CONDITIONS ON AUTOMOBILE EXHAUST GAS COMPOSITIONS.
12461 APTIC NO. 29893

PHOTOCHEMICAL REACTIONS OF MOTOR VEHICLE EXHAUST GASES.
12402 APTIC NO. 29960

AIR POLLUTION IN AN URBAN ENVIRONMENT.
12413 APTIC NO. 30045

ON PLUMBIC POLLUTION OF MUNICIPAL ATMOSPHERE--BEHAVIORS OF PLUMBIC COMPOUND AS AEROSOL.
12431 APTIC NO. 30073

INSTRUMENT FOR STUDYING THE ACTION OF EXHAUST GASES DILUTED IN THE AIR, ON BACTERIAL, CELLULAR, AND TISSULAR CULTURES.
12476 APTIC NO. 29849

LEAD IN THE ENVIRONMENT.
12564 APTIC NO. 29493

LEAD MEN HEADING TOWARD DESTRUCTION--SPREADING OMINOUS METAL POLLUTIONS.
12569 APTIC NO. 29789

FOUR-ALKYL LEAD AND ENVIRONMENTAL POLLUTION.
12588 APTIC NO. 29825

EXPERIMENTAL STUDIES ON THE HEALTH EFFECTS OF AUTO EXHAUST GAS IN LOW CONCENTRATIONS. (REPORT 1) PRELIMINARY EXPERIMENT.
12589 APTIC NO. 29921

PROCEEDINGS OF THE 9TH CONFERENCE OF JAPAN ASSOCIATION OF INDUSTRIAL HEALTH.
12526 APTIC NO. 29963

ADDITION OF LEAD TO FUEL - HARMFUL OR DANGEROUS? (Bleizusaetze im Kraftstoff - harmlos oder gefaehrlich)? Text in German. VDI (Ver. Deut. Ingr.) Nachr. (Berlin), 25(9):6, 1971.
12527 APTIC NO. 30000

SOME HEALTH SURVEY RESULTS OF UNDERGROUND GARAGE WORKERS.
12568 APTIC NO. 30074

DAMAGE TO PLANTS BY AIR POLLUTANTS.
12603 APTIC NO. 29746

IT BEGAN WITH THE SMOG IN CALIFORNIA. CALIFORNIA TEST, EUROPEAN TEST--INTERNATIONAL REGULATIONS OF AUTOMOBILE EXHAUST GAS EMISSIONS.
12640 APTIC NO. 30069

INDUSTRIAL EMISSIONS: AN ANALYSIS OF SOME KEY FACTORS.
12669 APTIC NO. 29469

ON THE BASIC LAW FOR ENVIRONMENTAL POLLUTION CONTROL, NOISE CONTROL LAW, WATER POLLUTION PREVENTION LAW, AND AIR POLLUTION PREVENTION LAW.
12670 APTIC NO. 29509

PRESENT SITUATION OF ADMINISTRATION CONCERNING POLLUTIONS.
12648 APTIC NO. 29598

SOME RECENT TOPICS IN AIR POLLUTION AND HEALTH IN NEW YORK.
12668 APTIC NO. 29817

POPULATION PLANTS TREES: ENVIRONMENTAL PROTECTION IN JAPAN.
12652 APTIC NO. 29859

COMPARATIVE STUDY OF CERTAIN PROVISIONS IN MEMBER STATES FOR CONTROLLING AIR POLLUTION.
12656 APTIC NO. 30052

NOBODY BREATHES FRESH AIR. FACTS AND ARGUMENTS ABOUT AIR POLLUTION.
12677 APTIC NO. 29459

ON SOME BASIC PROBLEMS OF THE PURIFICATION OF THE AIR.
12676 APTIC NO. 29591

AUTOPSY

PATHOLOGICAL STUDY ON THE EXPERIMENTAL RABBITS AT AIR-POLLUTED AREA IN YOKKAICHI.
12590 APTIC NO. 29502

ITAI-ITAI (OUCH-OUCH) DISEASE AND CADMIUM POLLUTION IN JAPAN.
12581 APTIC NO. 29673

AZINES

ON THE EFFECT OF ACCOMPANYING GASES IN QUANTITATIVE ANALYSIS OF HYDROGEN SULFIDE USING METHYLENE BLUE.
12343 APTIC NO. 29505

AZO DYE

PARALLEL DETERMINATION OF NICKEL AND COBALT IN URINE AND ATMOSPHERE.
12300 APTIC NO. 29953

DETERMINATION AND EVALUATION OF LOW CONCENTRATIONS OF INDUSTRIAL AIR POLLUTANTS.
12309 APTIC NO. 30014

B

BACTERIA

COLLECTION EFFICIENCIES OF RAINDROPS FOR SUBMICRON PARTICULATES.
12404 APTIC NO. 29709

INSTRUMENT FOR STUDYING THE ACTION OF EXHAUST GASES DILUTED IN THE AIR, ON BACTERIAL, CELLULAR, AND TISSULAR CULTURES.
12476 APTIC NO. 29849

STUDIES OF THE SIGNIFICANCE OF DUSTS AND GASES FOR THE PATHOLOGY OF INFECTIONS OF THE RESPIRATORY TRACT.
12529 APTIC NO. 29571

BAFFLES

AIR POLLUTION TEST METHODS COMPARED IN INCINERATOR EVALUATION PROGRAM.
12119 APTIC NO. 29837

MUFFLER FOR REMOVING PARTICULATE LEAD FROM EXHAUST GASES OF INTERNAL COMBUSTION ENGINES.
12168 APTIC NO. 29920

METHOD TO ARREST AND REMOVE WHITE SMOKE PRODUCED FROM MOLTEN ZINC PLATING PROCESS.
12135 APTIC NO. 29940

BAG FILTERS

DUST COLLECTOR FOR ELECTRIC FURNACE MANUFACTURING FERROALLOY.
12123 APTIC NO. 29481

POLLUTION CONTROL SYSTEMS FOR ASPHALT PLANTS.
12233 APTIC NO. 29492

ENVIRONMENTAL POLLUTION CONTROL MEASURES IN WEST EUROPE AND PROBLEMS OF CARBIDE ELECTRIC FURNACE DUST IN JAPAN.
12073 APTIC NO. 29675

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

BAGHOUSE OPERATION AT THE WHITING, INDIANA PLANT OF THE FEDERATED METALS DIVISION AMERICAN SMELTING AND REFINING COMPANY.
12107 APTIC NO. 29772

THE PROBLEM OF INDUSTRIAL DUST: WAYS TO REGULATE ITS COLLECTION.
12099 APTIC NO. 29990

FACTORS TO CONSIDER IN SELECTING AIR POLLUTION CONTROL EQUIPMENT.
12195 APTIC NO. 29996

ON A DUST-COLLECTING DEVICE FOR A FERROSILICON FURNACE.
12219 APTIC NO. 30086

FILTER FOR COLLECTING CARBON BLACK.
12130 APTIC NO. 30104

TFE-FLUOROCARBON FIBER FILTER BAGS--IT COSTS MORE TO GO FIRST CLASS.
12109 APTIC NO. 30121

LEAD SMELTING PLANT CONTROLS AIR EMISSIONS.
12069 APTIC NO. 30124

ON EXAMPLE OF PRACTICAL APPLICATION OF DUST COLLECTOR FOR ELECTRIC FURNACE FOR FERRO-ALLOY.
12632 APTIC NO. 29892

BARIUM COMPOUNDS

EFFECTS OF THE ADDITION OF BARIUM COMPOUND ON THE SMOKE CONCENTRATION OF DIESEL EXHAUST GAS.
12057 APTIC NO. 29696

CAN ADDITIVES DECREASE DIESEL SMOKE? Power, 114(8):60, Aug. 1970.
12085 APTIC NO. 29680

COMBUSTION OF WASTES CENTERING AROUND REMOVAL OF NOXIOUS GAS.
12077 APTIC NO. 29985

DEVELOPMENT OF A METHOD FOR DETERMINING SULPHUR OXIDES IN FLUE GASES.
12265 APTIC NO. 30084

BARLEY

EFFECT OF AIR AND WATER POLLUTION ON AGRICULTURAL PRODUCTS BY CD, PB, ZN ATTRIBUTED TO MINE REFINERY IN ANNAKA CITY, GUNMA PREFECTURE.
12601 APTIC NO. 27489

OZONE AND AIR IONS ACCOMPANYING BIOLOGICAL APPLICATIONS OF ELECTRIC FIELDS.
12594 APTIC NO. 29897

BASIC OXYGEN FURNACES

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

DETERMINATION OF AROMATIC HYDROCARBONS EMITTED FROM THE DRY BATTERY PLANT.
12287 APTIC NO. 29862

BELGIUM

TODAY'S BASE OF EUROPEAN MINERAL OIL SUPPLY.
12004 APTIC NO. 28337

GASOLINE, LEAD AND AIR POLLUTION.
12014 APTIC NO. 30027

POLLUTION TESTS ON IDLING GASOLINE MOTORS.
12251 APTIC NO. 29765

AIR POLLUTION BY SMOKE AND SO2.
12372 APTIC NO. 29289

AIR POLLUTION BY SMOKE AND SO2.
12373 APTIC NO. 29566

RELATION BETWEEN INDUSTRIALIZATION AND THE DISTRIBUTION AND GROWTH OF EPIPHYTIC LICHENS AND MOSSES IN MONTREAL.
12602 APTIC NO. 29998

COMPARATIVE STUDY OF PERMISSIBLE LIMITS OF AIR DUSTINESS IN VARIOUS COUNTRIES.
12639 APTIC NO. 29543

LEGAL ASPECTS OF AIR POLLUTION IN BELGIUM AND OTHER NEIGHBORING COUNTRIES.
12659 APTIC NO. 30040

COMPARATIVE STUDY OF CERTAIN PROVISIONS IN MEMBER STATES FOR CONTROLLING AIR POLLUTION.
12656 APTIC NO. 30052

BENZENE-SOLUBLE ORGANIC M

BENZPYRENE AND OTHER AROMATIC HYDROCARBONS IN THE DUST OF POLISH TOWNS.
12385 APTIC NO. 29569

SUSPENDED PARTICULATES IN OSAKA CITY.
12375 APTIC NO. 29853

THE PRESENT RESULTS OF DETERMINATIONS OF 3,4-BENZPYRENE IN THE AIR OVER BUDAPEST.
12631 APTIC NO. 29590

BENZENES

ON COMPOSITION AND LEAD CONTENT OF COMMERCIAL GASOLINE.
12048 APTIC NO. 29936

GAS CHROMATOGRAPHIC ANALYSIS OF BENZENE AND TOLUENE IN AUTOMOBILE EXHAUST GAS.
12295 APTIC NO. 29907

INTERNAL CONVERSION IN BENZENE, BENZENE-D6, AND SULFUR DIOXIDE.
12508 APTIC NO. 30063

COLLECTION OF LEGISLATIONS RELATED WITH MITI CONCERNING POLLUTIONS.
12646 APTIC NO. 29504

BENZO(3-4)PYRENE

A SHORT TERM DETERMINATION OF BENZO(A)PYRENE AND BENZO(K) FLUORANTHENE IN AIR POLLUTANTS.
12319 APTIC NO. 29965

BENZPYRENE AND OTHER AROMATIC HYDROCARBONS IN THE DUST OF POLISH TOWNS.
12385 APTIC NO. 29569

THE 3,4-BENZPYRENE CONTENT OF THE AIR IN TWO INDUSTRIAL AREAS.
12400 APTIC NO. 29586

TEN YEARS OF AIR POLLUTION IN HOKKAIDO.
12367 APTIC NO. 29727

EVOLUTION OF THE ATMOSPHERIC CONTAMINATION IN MADRID IN 1969.
12371 APTIC NO. 30089

THE PRESENT RESULTS OF DETERMINATIONS OF 3,4-BENZPYRENE IN THE AIR OVER BUDAPEST.
12631 APTIC NO. 29590

BENZOPYRENES

PHYSICAL-CHEMICAL PROBLEMS OF AIR POLLUTION.
11996 APTIC NO. 29786

EXHAUST GAS CLEANER FOR DIESEL ENGINES.
12221 APTIC NO. 29533

A SHORT TERM DETERMINATION OF BENZO(A)PYRENE AND BENZO(K) FLUORANTHENE IN AIR POLLUTANTS.
12319 APTIC NO. 29965

BENZPYRENE AND OTHER AROMATIC HYDROCARBONS IN THE DUST OF POLISH TOWNS.
12385 APTIC NO. 29569

THE 3,4-BENZPYRENE CONTENT OF THE AIR IN TWO INDUSTRIAL AREAS.
12400 APTIC NO. 29586

TEN YEARS OF AIR POLLUTION IN HOKKAIDO.
12367 APTIC NO. 29727

EVOLUTION OF THE ATMOSPHERIC CONTAMINATION IN MADRID IN 1969.
12371 APTIC NO. 30089

ON THE PROBLEM OF THE COMBINED EFFECTS OF SULFUR DIOXIDE AND BENZPYRENE ON THE ORGANISMS OF TEST ANIMALS.
12583 APTIC NO. 29585

THE ROLE OF TRACE METALS IN CHEMICAL CARCINOGENESIS: ASBESTOS CANCERS.
12543 APTIC NO. 29993

THE PRESENT RESULTS OF DETERMINATIONS OF 3,4-BENZPYRENE IN THE AIR OVER BUDAPEST.
12631 APTIC NO. 29590

BERYLLIOSIS

MICROEMISSION SPECTROCHEMICAL ANALYSIS OF HUMAN LUNGS FOR BERYLLIUM.
12580 APTIC NO. 29475

BERYLLIUM COMPOUNDS

TENTATIVE METHOD OF ANALYSIS FOR BERYLLIUM CONTENT OF ATMOSPHERIC PARTICULATE MATTER.
12307 APTIC NO. 29487

PROCEEDINGS OF THE 9TH CONFERENCE OF JAPAN ASSOCIATION OF INDUSTRIAL HEALTH.
12526 APTIC NO. 29963

BIO-ASSAY

AIR POLLUTION.
12324 APTIC NO. 29858

BIOCLIMATOLOGY

SIGNAL PROCESSING TECHNIQUES FOR ESTIMATING PARAMETERS OF CERTAIN BIOLOGICAL MODELS.
12570 APTIC NO. 29997

ATMOSPHERIC CARBON DIOXIDE AND THE BIOSPHERE.
12593 APTIC NO. 30078

BIOPSY

ITAI-ITAI (OUCH-OUCH) DISEASE AND CADMIUM POLLUTION IN JAPAN.
12581 APTIC NO. 29673

BISMUTH COMPOUNDS

TRACE ELEMENTS IN ATMOSPHERIC PRECIPITATION AROUND THE OTKAZNOE RESERVOIR.
12432 APTIC NO. 29910

BLACK LIQUOR OXIDATION

OXIDATION OF SODIUM SULFIDE AND MERCAPTIDE IN BLACK LIQUOR.
12071 APTIC NO. 29278

PULPERS APPLY ODOR CONTROL.
12104 APTIC NO. 30062

AUTOMATED ANALYSIS SYSTEMS MAKES KRAFT EMISSION MEASUREMENTS EASY.
12325 APTIC NO. 29913

BLAST FURNACES

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

CARBON MONOXIDE AS TOXIC GAS.
12538 APTIC NO. 29640

PROBLEMS OF FLUORINE EMISSION MEASUREMENTS.
12608 APTIC NO. 29736

BLENDING

OIL REFINERS PREPARE FOR ANIT-POLLUTION CONTROLS.
12040 APTIC NO. 29127

BLOOD CELLS

LEAD POLLUTION--A GROWING HAZARD TO PUBLIC HEALTH.
11999 APTIC NO. 29872

INFLUENCE OF PROLONGED CARBON MONOXIDE EXPOSURE AND ALTITUDE HYPOXIA ON SERUM LIPIDS IN MAN.
12558 APTIC NO. 29529

INFLUENCE OF PROLONGED CARBON MONOXIDE EXPOSURE AND HIGH ALTITUDE ON THE COMPOSITION OF BLOOD AND URINE IN MAN.
12559 APTIC NO. 29613

PLASMA VOLUME AND VASCULAR PERMEABILITY DURING HYPOXIA AND CARBON MONOXIDE EXPOSURE.
12582 APTIC NO. 29614

SOME PLANS FOR FUTURE STUDIES FOR LOW LEVEL OF LEAD ON THE HUMAN BEING.
12553 APTIC NO. 29815

THE STUDY OF THE POLLUTED AIR INFLUENCE ON CHILDREN S HEALTH IN RUHRDISTRICT.
12544 APTIC NO. 29899

BLOOD CHEMISTRY

LEAD IN THE ENVIRONMENT.
12564 APTIC NO. 29493

INTRODUCTION AND GENERAL DESCRIPTION OF THE STUDY AND OF THE PROCEDURES FOR PROLONGED EXPOSURE TO CARBON MONOXIDE AND HYPOXIA.
12530 APTIC NO. 29503

INFLUENCE OF PROLONGED CARBON MONOXIDE EXPOSURE AND ALTITUDE HYPOXIA ON SERUM LIPIDS IN MAN.
12558 APTIC NO. 29529

STUDIES ON THE INFLUENCE OF AIR POLLUTION ON THE HEALTH OF THE PEOPLE AT BELOSLAV, DISTRICT OF

VARNA, PEOPLE S REPUBLIC OF BULGARIA.
12557 APTIC NO. 29573

INFLUENCE OF PROLONGED CARBON MONOXIDE EXPOSURE AND HIGH ALTITUDE ON THE COMPOSITION OF BLOOD AND URINE IN MAN.
12559 APTIC NO. 29613

ITAI-ITAI (OUCH-OUCH) DISEASE AND CADMIUM POLLUTION IN JAPAN.
12581 APTIC NO. 29673

SOME PLANS FOR FUTURE STUDIES FOR LOW LEVEL OF LEAD ON THE HUMAN BEING.
12553 APTIC NO. 29815

FOUR-ALKYL LEAD AND ENVIRONMENTAL POLLUTION.
12588 APTIC NO. 29825

THE STUDY OF THE POLLUTED AIR INFLUENCE ON CHILDREN S HEALTH IN RUHRDISTRICT.
12544 APTIC NO. 29899

EFFECTS OF ATMOSPHERIC LEAD ON TRAFFIC POLICEMEN IN A MEDIUM SIZED CITY.
12566 APTIC NO. 29958

BLOOD PRESSURE

INTRODUCTION AND GENERAL DESCRIPTION OF THE STUDY AND OF THE PROCEDURES FOR PROLONGED EXPOSURE TO CARBON MONOXIDE AND HYPOXIA.
12530 APTIC NO. 29503

ITAI-ITAI (OUCH-OUCH) DISEASE AND CADMIUM POLLUTION IN JAPAN.
12581 APTIC NO. 29673

EXPERIMENTAL STUDIES ON THE HEALTH EFFECTS OF AUTO EXHAUST GAS IN LOW CONCENTRATIONS. (REPORT 1) PRELIMINARY EXPERIMENT.
12589 APTIC NO. 29921

BLOOD VESSELS

PATHOLOGICAL STUDY ON THE EXPERIMENTAL RABBITS AT AIR-POLLUTED AREA IN YOKKAICHI.
12590 APTIC NO. 29502

PLASMA VOLUME AND VASCULAR PERMEABILITY DURING HYPOXIA AND CARBON MONOXIDE EXPOSURE.
12582 APTIC NO. 29614

BLOWBY

PROBLEMS OF AERATION OF THE CRANKCASE OF RECIPROCATING ENGINES WITH AN OTTO WORK CYCLE.
12009 APTIC NO. 29721

BODY FLUIDS

PLASMA VOLUME AND VASCULAR PERMEABILITY DURING HYPOXIA AND CARBON MONOXIDE EXPOSURE.
12582 APTIC NO. 29614

BOILERS

COMBUSTION OF WASTE OIL FROM COAL.
12043 APTIC NO. 29534

NITROGEN OXIDES ANALYSIS.
12042 APTIC NO. 29538

CONSIDERATIONS IN THE CONSTRUCTION OF LARGE REFUSE INCINERATORS.
12026 APTIC NO. 29547

MARKET DEVELOPMENT IN GAS ECONOMY.
12010 APTIC NO. 29781

THE EMISSION AND IMMISSION CONDITIONS OF THE POWER PLANTS IN THE BOEHLENER AREA.
12045 APTIC NO. 30072

THE SE-DUCT--AN IDEAL SOLUTION FOR GAS HEATERS.
12002 APTIC NO. 30132

CARBON MONOXIDE AS A COMBUSTION CONTROL PARAMETER.
12072 APTIC NO. 29471

VENTILATION AND EXPLOSION EXPERIMENTS IN A WATER-TUBE BOILER OF A POWER PLANT.
12091 APTIC NO. 29514

CO BOILER OF FLUIDIZED BED TYPE CATALYTIC CRACKING PROCESS PRODUCIN NO LEAD GASOLINE.
12237 APTIC NO. 29535

DEVICE TO HOLD IN PLACE ATOMIZER NOZZLES OF A WASHER DEVICE FOR SULFUR OXIDE GAS CONTAINED IN COMBUSTION EXHAUST GAS FROM BOILER.
12138 APTIC NO. 29685

DEVELOPMENT OF A NEW DUST COLLECTOR.
12056 APTIC NO. 29686

ELECTRIC DUST COLLECTION DEVICE.
12151 APTIC NO. 29819

ALKALI AND HEAT RECOVERY IN THE FLUE GASES FROM RECOVERY BOILERS.
12193 APTIC NO. 29852

EXPERIMENTAL RESEARCH ON LOW EXCESS AIR COMBUSTION IN BOILER BURNING HEAVY OIL ONLY.
12142 APTIC NO. 29860

STUDIES ON AIR POLLUTION CONTROL BY ADDITIVE INJECTION. PART II - PREVENTION OF CLOGGING AT HIGH TEMPERATURE HEATING SURFACE OF BOILER BY ADDING MG(OH)2 POWDER.
12075 APTIC NO. 29941

CONTROL OF POLLUTANT EMISSION AND SULPHURIC ACID CORROSION FROM COMBUSTION OF RESIDUAL FUEL OIL. PART I: LOW-PRESSURE HEATING BOILERS WITH MECHANICAL ATOMIZING BURNERS.
12164 APTIC NO. 30055

REDUCING SO2 EMISSION FROM STATIONARY SOURCES.
12098 APTIC NO. 30102

STUDY ON DESULFURIZATION BY THE INJECTION OF LIMESTONE POWDER INTO FURNACE OF OIL FIRING BOILER (PART I).
12145 APTIC NO. 30131

JIS ANALYTICAL PROCESS FOR NITROGEN OXIDES IN WASTE GAS.
12355 APTIC NO. 29677

DETERMINATION OF THE SOOT INDEX IN WASTE GASES OF OIL BURNERS.
12257 APTIC NO. 29749

EMISSION MONITORING WITH ACKNOWLEDGED MEASURING UNITS AND ANALYZERS.
12260 APTIC NO. 29955

POLLUTIONS AND TOKYO METROPOLITAN GOVERNMENT.
12365 APTIC NO. 29973

COMPLEX ALKALI IRON SULFATES A CONTRIBUTION TO THE THERMODYNAMICS OF FIRESDIDE HIGH-TEMPERATURE CORROSION.
12616 APTIC NO. 29783

PROBLEMS IN INDUSTRIAL POWER PLANTS.
12618 APTIC NO. 29956

A STUDY OF THE CONVERSION OF SO2 TO SO3.
12623 APTIC NO. 30022

VALUE ANALYSIS OF COAL.
12629 APTIC NO. 30122

BONES

LEAD IN THE ENVIRONMENT.
12564 APTIC NO. 29493

THE INFLUENCE OF AIR POLLUTION ON PUBLIC HEALTH.
12586 APTIC NO. 29589

ITAI-ITAI (OUCH-OUCH) DISEASE AND CADMIUM POLLUTION IN JAPAN.
12581 APTIC NO. 29673

THE STUDY OF THE POLLUTED AIR INFLUENCE ON CHILDREN S HEALTH IN RUHRDISTRICT.
12544 APTIC NO. 29899

ADDITION OF LEAD TO FUEL - HARMFUL OR DANGEROUS? (Bleizusaetze im Kraftstoff - harmlos oder gefaehrlich)? Text in German. VDI (Ver. Deut. Ingr.) Nachr. (Berlin), 25(9):6, 1971.
12527 APTIC NO. 30000

FEDERALISM MAKES ENVIRONMENTAL PROTECTION DIFFICULT.
12654 APTIC NO. 29969

BORON COMPOUNDS

TRACE ELEMENTS IN ATMOSPHERIC PRECIPITATION AROUND THE OTKAZNOE RESERVOIR.
12432 APTIC NO. 29910

THE STUDY OF THE EVOLUTION OF ATOMIC SIZED PARTICLES IN THE AIR.
12436 APTIC NO. 29946

BREATHING

LEAD POLLUTION--A GROWING HAZARD TO PUBLIC HEALTH.
11999 APTIC NO. 29872

OBSERVATIONS ON THE FIGHT AGAINST DUST BY MEANS OF SALINE AEROSOLS.
12475 APTIC NO. 29551

ADDITION OF LEAD TO FUEL - HARMFUL OR DANGEROUS? (Bleizusaetze im Kraftstoff - harmlos oder gefaehrlich)? Text in German. VDI (Ver. Deut. Ingr.) Nachr. (Berlin), 25(9):6, 1971.
12527 APTIC NO. 30000

PATIENT ADVICE DURING ACUTE AIR POLLUTION EPISODE.
12531 APTIC NO. 29878

CAN ANYTHING BE DONE FOR EMPHYSEMA? J. Louisiana State Med. Soc., 122(7):216-218, July 1970. 18 refs.
12579 APTIC NO. 30137

MEASURES TAKEN BY THE REGIONAL SOCIAL SECURITY ADMINISTRATION OF LIMOGES TO REDUCE THE RISKS OF SILICOSIS.
12171 APTIC NO. 29561

BROMIDES

PHYSICAL-CHEMICAL PROBLEMS OF AIR POLLUTION.
11996 APTIC NO. 29786

BROMINE

TRIAL CONSTRUCTION OF NON-DISPERSION TYPE VISIBLE LIGHT GAS ANALYZE AND DETERMINATION OF NITROGEN DIOXIDE, CHLORINE, AND BROMINE.
12303 APTIC NO. 29762

FLUOROMETRIC DETERMINATION OF BROMINE: APPLICATION TO MEASUREMENT OF BROMINE AEROSOLS.
12255 APTIC NO. 29811

BROMINE COMPOUNDS

PHYSICAL-CHEMICAL PROBLEMS OF AIR POLLUTION.
11996 APTIC NO. 29786

TRACE ELEMENTS IN ATMOSPHERIC PRECIPITATION AROUND THE OTKAZNOE RESERVOIR.
12432 APTIC NO. 29910

COLLECTION OF LEGISLATIONS RELATED WITH MITI CONCERNING POLLUTIONS.
12646 APTIC NO. 29504

BRONCHI

PATHOLOGICAL STUDY ON THE EXPERIMENTAL RABBITS AT AIR-POLLUTED AREA IN YOKKAICHI.
12590 APTIC NO. 29502

BRONCHIAL CANCER

PULMONARY COMPLICATIONS OF ASBESTOS EXPOSURE.
12552 APTIC NO. 29221

BRONCHITIS

REPORT FOR THE INVESTIGATION ON THE METHOD OF SO2 TEST.
12301 APTIC NO. 29381

PATHOLOGICAL STUDY ON THE EXPERIMENTAL RABBITS AT AIR-POLLUTED AREA IN YOKKAICHI.
12590 APTIC NO. 29502

STUDY ON THE EFFECTS OF AIR POLLUTION ON HUMAN BODY--WITH SPECIAL REFERENCE TO OBJECTIVE, COMPARATIVE STUDY OF ALL THE INHABITANTS BY CHEST X-RAY RINDINGS.
12554 APTIC NO. 29904

STUDIES ON PROGNOSIS OF CHRONIC BRONCHITIS.
12587 APTIC NO. 29916

ATMOSPHERIC POLLUTIONS AND HEALTH.
12537 APTIC NO. 29971

SOME HEALTH SURVEY RESULTS OF UNDERGROUND GARAGE WORKERS.
12568 APTIC NO. 30074

CAN ANYTHING BE DONE FOR EMPHYSEMA? J. Louisiana State Med. Soc., 122(7):216-218, July 1970. 18 refs.
12579 APTIC NO. 30137

CHANGES IN AIRWAYS CONDUCTANCE ON SMOKING A CIGARETTE.
12540 APTIC NO. 30135

BRONCHODILATORS

PATIENT ADVICE DURING ACUTE AIR POLLUTION EPISODE.
12531 APTIC NO. 29878

THE ROLE OF AIR POLLUTION ON CHRONIC OBSTRUCTIVE PULMONARY DISEASE.
12539 APTIC NO. [illegible]

BRONCHOPNEUMONIA

PULMONARY CHANGES IN 7000 MICE FOLLOWING PROLONGED EXPOSURE TO AMBIENT AND FILTERED LOS ANGELES AIR.
12551 APTIC NO. 29763

BROWNIAN MOVEMENT

APPROXIMATE SOLUTION OF THE EQUATIONS FOR AEROSOL AGGLOMERATION.
12483 APTIC NO. 30111

BUDGETS

NEW TREND IN POLLUTIONS COUNTERMEASURES IN THE 70 S.
12660 APTIC NO. 29507

ADDENDUM TO ENVIRONMENTAL POLLUTIONS IN KAWASAKI CITY.
12647 APTIC NO. 29511

PRESENT SITUATION OF ADMINISTRATION CONCERNING POLLUTIONS.
12648 APTIC NO. 29598

BUILDINGS

REPORT ON LEAD POLLUTION SURVEY.
12361 APTIC NO. 29465

AIR POLLUTION BY EXHAUST GAS II. DETERMINATION OF LEAD AND CARBON MONOXIDE INSIDE A GARAGE AND A REPAIR FACTORY IN TOKYO CITY.
12397 APTIC NO. 29576

INDOOR/OUTDOOR AIR QUALITY RELATIONSHIPS.
12398 APTIC NO. 30090

GASEOUS PLUME DIFFUSION ABOUT ISOLATED STRUCTURES OF SIMPLE GEOMETRY. (ANNUAL PROGRESS REPORT).
12438 APTIC NO. 29584

ATMOSPHERIC DISPERSION OF STACK EFFLUENTS.
12458 APTIC NO. 29773

ESTIMATION OF GROUND LEVEL CONCENTRATION BY SMOKE-DIFFUSION WIND TUNNELS.
12462 APTIC NO. 29820

SOME HEALTH SURVEY RESULTS OF UNDERGROUND GARAGE WORKERS.
12568 APTIC NO. 30074

BUSES

BUS AND VEHICLE FOR TRANSPORTATION WITH ELECTRIC DRIVE.
11987 APTIC NO. 29517

AMAZING HOT-GAS ENGINE POWERS CLEAN-AIR BUS.
12037 APTIC NO. 29876

EXPERIMENTS WITH ELECTRIC VEHICLES.
11989 APTIC NO. 29886

EXHAUST EMISSIONS FROM HEAVY DUTY VEHICLES.
12332 APTIC NO. 27631

BUTADIENES

QUALITATIVE ANALYSIS OF EXHAUST GAS FROM FISH MEAL PLANT.
12028 APTIC NO. 29662

BUTANES

DESULFURIZATION OF LIQUEFIED PROPANE GAS. MOLECULAR SIEVE PROCESS.
12053 APTIC NO. 29617

ANALYSIS OF HC OF LOW GRADE IN ATMOSPHERE.
12391 APTIC NO. 29482

STUDIES ON PHOTOCHEMICAL REACTION BETWEEN SULFURIC ACID GAS AND ORGANIC COMPOUNDS (2).
12512 APTIC NO. 29463

BUTENES

QUALITATIVE ANALYSIS OF EXHAUST GAS FROM FISH MEAL PLANT.
12028 APTIC NO. 29662

PHOTOCHEMICAL REACTION BETWEEN SO2 AND ORGANIC COMPOUNDS (II).
12514 APTIC NO. 29967

BY-PRODUCT RECOVERY

DESIGN OF NEW SILVER-RECOVERY INCINERATOR.
12008 APTIC NO. 29635

RECENT TREND AND PROBLEMS OF INDUSTRIAL WASTES TREATING EQUIPMENT.
12041 APTIC NO. 29827

TWO NEW PROCESSES FOR RECOVERY OF SULPHUR OXIDES FROM SMELTER GASES.
12207 APTIC NO. 29200

HEAT EXTRACTION AIDS DEPOLLUTION OF GASES AND WATER IN CHEVROLET FOUNDRY.
12097 APTIC NO. 29523

THE NEW PLANT FOR PRODUCTION OF SULFUR DIOXIDE AT LEVERKUSEN.
12203 APTIC NO. 29577

OUTLOOK OF ENVIRONMENTAL POLLUTION AND ITS PREVENTION TECHNOLOGY.
12124 APTIC NO. 29600

PREVENTION OF AIR POLLUTION ON IRON FOUNDRY.
12178 APTIC NO. 29602

SMELTER POLLUTION CONTROL--FACTS AND PROBLEMS.
12076 APTIC NO. 29622

FEASIBILITY STUDY OF NEW SULFUR OXIDE CONTROL PROCESSES FOR APPLICATION TO SMELTERS AND POWER PLANTS. PART IV: THE WELLMAN-LORD SO2 RECOVERY PROCESS FOR APPLICATION TO POWER PLANT FLUE GASES. (FINAL REPORT).
12208 APTIC NO. 29641

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

ON REGENERATION OF ACTIVATED CARBON HAVING ADSORBED SO2.
12173 APTIC NO. 29732

BAGHOUSE OPERATION AT THE WHITING, INDIANA PLANT OF THE FEDERATED METALS DIVISION AMERICAN SMELTING AND REFINING COMPANY.
12107 APTIC NO. 29772

ALKALI AND HEAT RECOVERY IN THE FLUE GASES FROM RECOVERY BOILERS.
12193 APTIC NO. 29852

NEW PROCESS OFFERS 99.9% SULPHUR RECOVERY.
12062 APTIC NO. 29855

REMOVAL OF BROWN FUME FROM WASTE GASES OF OPEN HEARTH FURNACE OXYGEN STEELMAKING PROCESS.
12194 APTIC NO. 29945

HIGH-CONCENTRATION SULFUR DIOXIDE FROM CALCINING PYRITES IN THE DKSM FURNACE.
12157 APTIC NO. 29982

ELIMINATION OF OXIDES CONTAINED IN CERTAIN RESIDUAL INDUSTRIAL GASES.
12129 APTIC NO. 30043

KINETICS OF RECOVERING SULFUR FROM THE SPENT SEED IN AN MHD POWER PLANT.
12118 APTIC NO. 30048

PROCESS FOR REMOVING SULPHUR FROM GASES.
12139 APTIC NO. 30049

SULFURIC ACID, SO2 DEVELOPMENTS: REMOVING SO2 AND ACID MIST WITH VENTURI SCRUBBERS.
12209 APTIC NO. 30080

REDUCING SO2 EMISSION FROM STATIONARY SOURCES.
12098 APTIC NO. 30102

SULFUR RECOVERY IN THE MANUFACTURE OF PIPELINE GAS FROM COAL.
12635 APTIC NO. 29143

AN SO2 REMOVAL AND RECOVERY PROCESS.
12630 APTIC NO. 29144

THE ECONOMIC IMPORTANCE OF HEAT RECOVERY FROM HOUSEHOLD REFUSE INCINERATORS.
12625 APTIC NO. 29992

C

CADMIUM COMPOUNDS

HEAVY METAL POLLUTION IN THE ONAHAMA INDUSTRIAL AREA. 1ST REPORT. DISTRIBUTION OF HEAVY METALS IN SOIL.
12006 APTIC NO. 29539

INVESTIGATION OF HEAVY METAL POLLUTION IN IWAKI CITY.
12007 APTIC NO. 29787

BASIC RESEARCH ON SMOKE DESULFURIZATION BY LIME-METALS, 2ND REPORT - EFFECT OF METAL ADDITION ON CALCINATION OF LIME.
12153 APTIC NO. 29080

PLANTS AND SOILS AS INDICATORS OF METALS IN THE AIR.
12281 APTIC NO. 30113

SEASONAL VARIATION OF THE CONCENTRATION OF HEAVY METALS IN SUSPENDED DUST ON THE MAIN STREETS.
12384 APTIC NO. 30025

ITAI-ITAI (OUCH-OUCH) DISEASE AND CADMIUM POLLUTION IN JAPAN.
12581 APTIC NO. 29673

AIR POLLUTION BY TRACE METALS IN JAPAN.
12561 APTIC NO. 29816

EFFECT OF AIR AND WATER POLLUTION ON AGRICULTURAL PRODUCTS BY CD, PB, ZN ATTRIBUTED TO MINE REFINERY IN ANNAKA CITY, GUNMA PREFECTURE.
12601 APTIC NO. 27489

EXPANSION AND STRENGTHENING OF AIR POLLUTION CONTROL COUNTERMEASURES.
12671 APTIC NO. 29495

CALCIUM COMPOUNDS

AIR POLLUTION BY LEAD AND ZINC IN THE AREA OF COMBINED METALLURGICA WORKS AND ITS INFLUENCE ON VEGETATION AND SOIL.
12031 APTIC NO. 29572

BASIC RESEARCH ON SMOKE DESULFURIZATION BY LIME-METALS, 1ST REPORT - DESULFURIZATION EFFECT BY ADDITION OF METAL.
12154 APTIC NO. 29478

STUDY ON MECHANISM OF REACTION WITH SULFUR DIOXIDE OF LIMESTONE POWDER BLOWN INTO COMBUSTION GAS.
12146 APTIC NO. 29479

DUST COLLECTOR FOR ELECTRIC FURNACE MANUFACTURING FERROALLOY.
12123 APTIC NO. 29481

ON A DUST-COLLECTING DEVICE FOR A FERROSILICON FURNACE.
12219 APTIC NO. 30086

THE SCRUBBING OF TAIL GAS FROM SULFURIC ACID PLANTS.
12067 APTIC NO. 30096

PARTICLE SIZE MEASURING WITH THE TELEVISION MICROSCOPE QUANTIMET FOR SIZES MINUS 4 MICRONS.
12304 APTIC NO. 29512

A PHOTOGRAPHIC METHOD OF DETERMINING THE EMISSION OF DUST GENERATED BY INDUSTRIAL MACHINERY.
12254 APTIC NO. 29544

MEASUREMENT OF GASEOUS AND PARTICULATE FLUORINE EMISSIONS.
12322 APTIC NO. 29738

SOME ASPECTS OF THE METAL ION CHEMISTRY OF THE EARTH'S ATMOSPHERE.
12421 APTIC NO. 28891

BORDEAUX. STUDY OF ATMOSPHERIC POLLUTION IN THE BUILT-UP AREA.
12420 APTIC NO. 30109

TWO OBSERVATIONS IN A FLUORSPAR QUARRY.
12535 APTIC NO. 29565

STUDIES OF THE SIGNIFICANCE OF DUSTS AND GASES FOR THE PATHOLOGY OF INFECTIONS OF THE RESPIRATORY TRACT.
12529 APTIC NO. 29571

CALCIUM SULFATES

STUDY ON MECHANISM OF REACTION WITH SULFUR DIOXIDE OF LIMESTONE POWDER BLOWN INTO COMBUSTION GAS.
12146 APTIC NO. 29479

A PHOTOGRAPHIC METHOD OF DETERMINING THE EMISSION OF DUST GENERATED BY INDUSTRIAL MACHINERY.
12254 APTIC NO. 29544

CALIBRATION METHODS

REVIEW OF CASCADE IMPACTORS FOR PARTICLE SIZE ANALYSIS AND A NEW CALIBRATION FOR THE CASELLA CASCADE IMPACTOR.
12311 APTIC NO. 29270

INVESTIGATION ON THE MEASURING ERRORS OF CONDUCTOMETRIC SULFUR DIOXIDE ANALYZER USED FOR AIR POLLUTION MONITOR.
12356 APTIC NO. 29398

A METHOD FOR OBTAINING DILUTE MIXTURES OF GASES.
12284 APTIC NO. 29651

PRODUCTION OF GASES OF KNOWN SPECIFIC ACTIVITY IN A REACTOR FOR CALIBRATING GASEOUS EFFLUENT MONITORS.
12264 APTIC NO. 29848

ON THE MEASUREMENT AND ABSOLUTE CALIBRATION OF THE STRENGTH OF SOLAR RADIATION ENERGY.
12348 APTIC NO. 29863

A METER FOR THE SITE DETERMINATION OF HYDROLYSABLE FLUORIDES IN SULPHUR HEXAFLUORIDE.
12336 APTIC NO. 30007

CALIFORNIA

THE EXHAUST GAS COMPOSITION AT THE FM GASOLINE ENGINE.
12046 APTIC NO. 29516

DEVELOPMENT OF A METEOROLOGICALLY CONTROLLED AGRICULTURAL BURNING PROGRAM.
12058 APTIC NO. 29724

CONTROL OF EXHAUST GAS EMISSION OF MITSUBISHI COLT GALANT.
12228 APTIC NO. 29901

PLANTS AND POLLUTED AIR.
12230 APTIC NO. 30083

MEASUREMENT OF ATMOSPHERIC LEVELS OF PESTICIDES.
12392 APTIC NO. 29812

ATMOSPHERIC REACTIONS AND SCAVENGING PROCESSES.
12426 APTIC NO. 29774

HISTOPATHOLOGIC FINDINGS IN RATS EXPOSED TO AMBIENT AND FILTERED AIR.
12550 APTIC NO. 29715

PULMONARY CHANGES IN 7000 MICE FOLLOWING PROLONGED EXPOSURE TO AMBIENT AND FILTERED LOS ANGELES AIR.
12551 APTIC NO. 29763

CARBON MONOXIDE AND SURVIVAL FROM MYOCARDIAL INFARCTION.
12541 APTIC NO. 30127

CORROSION RATES OF MILD STEEL IN COASTAL, INDUSTRIAL, AND INLAND AREAS OF NORTHERN CALIFORNIA.
12620 APTIC NO. 28810

CRITERIA OF INJURIOUSNESS AS THE BASIS OF STANDARDS OF THE HYGIENE OF THE AIR.
12642 APTIC NO. 29574

IT BEGAN WITH THE SMOG IN CALIFORNIA. CALIFORNIA TEST, EUROPEAN TEST--INTERNATIONAL REGULATIONS OF AUTOMOBILE EXHAUST GAS EMISSIONS.
12640 APTIC NO. 30069

AIR POLLUTION--THE STATUS TODAY.
12681 APTIC NO. 28923

CANADA

LAW-MAKERS SAY: CLEAN UP OR SHUT DOWN.
12055 APTIC NO. 29628

LAB TESTS SHOW ELECTRIC FIELD MIGHT HELP REDUCE ENGINE KNOCK.
12088 APTIC NO. 30036

CONTROL OF POLLUTANT EMISSION AND SULPHURIC ACID CORROSION FROM COMBUSTION OF RESIDUAL FUEL OIL. PART I: LOW-PRESSURE HEATING BOILERS WITH MECHANICAL ATOMIZING BURNERS.
12164 APTIC NO. 30055

LOSS OF MERCURY FROM CHLORALKALI PLANTS.
12120 APTIC NO. 30117

THE ADIABATIC FLASH PHOTOLYSIS OF NO2 AND SO2.
12259 APTIC NO. 29630

A STUDY OF AIR POLLUTION AROUND A SULPHURIC ACID PLANT.
12374 APTIC NO. 29883

THE EFFECT OF ATMOSPHERIC CONDITIONS ON PLUME RISE.
12455 APTIC NO. 29865

DISSOCIATIVE ELECTRON ATTACHMENT PROCESSES IN SO2 AND NO2.
12444 APTIC NO. 30008

MECHANISM OF SINGLET MOLECULAR OXYGEN FORMATION FROM PHOTOLYSIS OF OZONE AT 2537 A.
12424 APTIC NO. 30110

ELECTRON ENERGY LOSS SPECTRA OF NO2 AND SO2.
12480 APTIC NO. 30079

RELATION BETWEEN INDUSTRIALIZATION AND THE DISTRIBUTION AND GROWTH OF EPIPHYTIC LICHENS AND MOSSES IN MONTREAL.
12602 APTIC NO. 29998

CANCER

FLAME PHOTOMETRIC DETECTION OF VOLATILE SULPHUR COMPOUNDS IN SMOKE FROM VARIOUS TYPES OF CIGARETTES.
12283 APTIC NO. 29874

PULMONARY COMPLICATIONS OF ASBESTOS EXPOSURE.
12552 APTIC NO. 29221

CANCER MORTALITY IN RELATION TO NATIONAL CONSUMPTION OF CIGARETTES, SOLID FUEL, TEA AND COFFEE.
12585 APTIC NO. 29608

PULMONARY CHANGES IN 7000 MICE FOLLOWING PROLONGED EXPOSURE TO AMBIENT AND FILTERED LOS ANGELES AIR.
12551 APTIC NO. 29763

SOME RECENT TOPICS IN AIR POLLUTION AND HEALTH IN LONDON.
12562 APTIC NO. 29882

ATMOSPHERIC POLLUTIONS AND HEALTH.
12537 APTIC NO. 29971

THE ROLE OF TRACE METALS IN CHEMICAL CARCINOGENESIS: ASBESTOS CANCERS.
12543 APTIC NO. 29993

FEDERALISM MAKES ENVIRONMENTAL PROTECTION DIFFICULT.
12654 APTIC NO. 29969

CARBIDES

ENVIRONMENTAL POLLUTION CONTROL MEASURES IN WEST EUROPE AND PROBLEMS OF CARBIDE ELECTRIC FURNACE DUST IN JAPAN.
12073 APTIC NO. 29675

REACTOR DEVICE FOR HEAVY OIL DESULFURIZATION.
12149 APTIC NO. 29987

TFE-FLUOROCARBON FIBER FILTER BAGS--IT COSTS MORE TO GO FIRST CLASS.
12109 APTIC NO. 30121

CARBON BLACK

EMISSION OF AIR POLLUTANTS FROM AIRCRAFT JET ENGINES.
12035 APTIC NO. 29734

JET AIRCRAFT AIR POLLUTANT PRODUCTION AND DISPERSION.
12016 APTIC NO. 30130

ON CONDITIONS FOR PROPER USE OF ACTIVATED CARBON AS AN AIR PURIFICATION AGENT (2) - ITS EFFICIENCY FOR REMOVAL OF SO2 GAS.
12113 APTIC NO. 29496

ADSORPTION OF SULFUR DIOXIDE GAS BY ACTIVATED CARBON OR MOLECULAR SIEVE.
12201 APTIC NO. 29497

METHOD TO REMOVE HARMFUL SUBSTANCES FROM STACK GAS BY-PRODUCING AMMONIUM SULFATE AND OTHERS (XV) - ACTIVATION ENERGY OF ACTIVATED CARBON FOR SO2 ADSORPTION.
12161 APTIC NO. 29648

ON REGENERATION OF ACTIVATED CARBON HAVING ADSORBED SO2.
12173 APTIC NO. 29732

ADSORPTIVITY OF DESULFURIZING ACTIVATED CARBON FOR SULFUROUS ACID GAS (II) - EFFECT OF THE ADSORPTION - RINSING PROCESS ON THE ADSORPTIVITY.
12238 APTIC NO. 29788

CONTROL OF EXHAUST GAS EMISSION OF MITSUBISHI COLT GALANT.
12228 APTIC NO. 29901

EXHAUST GAS PURIFIER.
12179 APTIC NO. 29905

DIRECT DESULFURIZATION OF HEAVY OIL.
12111 APTIC NO. 29908

EQUALIZATION OF PARTICLE TRANSFER IN TRANSFERABLE STRATUM.
12144 APTIC NO. 29928

HYDRODESULFURIZATION OF HEAVY QUALITY OIL, RESIDUAL OIL, ETC.. (Jushitsuyu, zansayu to no suisokadatsuryuho). Text in Japanese. (Ishikawajima-Harima Heavy Industries (Japan)) Japan. Pat. Sho 46-819. 3p., Jan. 9, 1971. (Appl. Dec. 25, 1967, claims not given).
12218 APTIC NO. 29933

ADSORPTIVITY OF DESULFURIZING ACTIVATED CARBON FOR SULFUROUS ACID GAS (I). PERFORMANCE VARIATION OF ACTIVATED CARBON IN PILOT PLANT.
12206 APTIC NO. 29939

ACTIVATED CARBON INDUSTRY AND PROBLEMS IN FUTURE - SPHERICAL ACTIVATED CARBON FROM COAL.
12235 APTIC NO. 29942

CAN ADDITIVES DECREASE DIESEL SMOKE? Power, 114(8):60, Aug. 1970.
12206 APTIC NO. 29939

COMBUSTION OF WASTES CENTERING AROUND REMOVAL OF NOXIOUS GAS.
12077 APTIC NO. 29985

METHOD FOR MANUFACTURING SPHERICAL ACTIVE CARBON FROM COAL.
12141 APTIC NO. 29988

PROCESS FOR REMOVING SULPHUR FROM GASES.
12139 APTIC NO. 30049

ON A DUST-COLLECTING DEVICE FOR A FERROSILICON FURNACE.
12219 APTIC NO. 30086

FILTER FOR COLLECTING CARBON BLACK.
12130 APTIC NO. 30104

TFE-FLUOROCARBON FIBER FILTER BAGS--IT COSTS MORE TO GO FIRST CLASS.
12109 APTIC NO. 30121

DETERMINATION OF ORGANICALLY BOUND CARBON IN MOIST WASTE GASES.
12345 APTIC NO. 29839

A MATHEMATICAL MODEL FOR MEASURING MASS/NUMBER INDEX OF RESPIRABLE AIRBORNE COAL DUST.
12258 APTIC NO. 30081

SOME OBSERVATIONS ON THE ABNORMAL AGGLOMERATION OF CARBON BLACK AND OF GRAPHITE POWDER.
12506 APTIC NO. 29548

COAGULATION OF DUST PARTICLES, IN PARTICULAR BY AEROSOLS OF SEA WATER SALT.
ERROR

STUDIES OF THE SIGNIFICANCE OF DUSTS AND GASES FOR THE PATHOLOGY OF INFECTIONS OF THE RESPIRATORY TRACT.
12529 APTIC NO. 29571

CARBON DIOXIDE

COMBUSTION REGULARITY A KEY TO SPARK-IGNITION ENGINE EMISSIONS REDUCTION? Preprint, Academia R. P. R., Bucharest, 15p., 1970. 4 refs. (Presented at the Internal Combustion Engines Conference, 2nd International, Bucharest (Rumania), 1970.)
12023 APTIC NO. 27641

QUALITATIVE ANALYSIS OF EXHAUST GAS FROM FISH MEAL PLANT.
12028 APTIC NO. 29662

ATMOSPHERIC POLLUTION IN HEADINGS FOLLOWING SHOTFIRING.
12024 APTIC NO. 29678

PHYSICAL-CHEMICAL PROBLEMS OF AIR POLLUTION.
11996 APTIC NO. 29786

CONTROL OF OIL-FIRED HEATERS, A MODERN COMMUNAL TASK.
12015 APTIC NO. 30100

COMPARISON OF THE CATALYTIC ACTIVITY OF MANGANESE DIOXIDE OF ELECTROLYTIC ORIGIN AND OF MANGANESE HYDROXIDE IN THE OXIDATION OF CARBON OXIDES. IV. ADSORPTION AND DESORPTION OF THE REAGENTS AND THE PRODUCTS OF THE REACTION ON MANGANESE HYDROXIDE.
12192 APTIC NO. 29506

VENTILATION AND EXPLOSION EXPERIMENTS IN A WATER-TUBE BOILER OF A POWER PLANT.
12091 APTIC NO. 29514

SEPARATION OF CO2 AND H2S FROM GAS MIXTURES.
12086 APTIC NO. 29752

MANUFACTURING OF INDUSTRIAL CATALYST COMPRISING ALUMINA AS CARRIER. (Arumina o tantai to shita kogyo shokubai no seizo). Text in Japanese. Preprint, Japan Industrial Technology Assoc., Tokyo, 12p., 1970. 5 refs. (Presented at the Industrial Catalyst Seminar Tokyo, Japan, Nov. 9, 1970.)
12158 APTIC NO. 29755

COMBUSTION OF WASTES CENTERING AROUND REMOVAL OF NOXIOUS GAS.
12077 APTIC NO. 29985

PROCESS FOR REMOVING SULPHUR FROM GASES.
12139 APTIC NO. 30049

INFRARED SPECTROSCOPIC STUDY OF THE CATALYTIC OXIDATION OF CARBON MONOXIDE TO CARBON DIOXIDE ON MANGANESE DIOXIDE.
12105 APTIC NO. 30091

JIS ANALYTICAL PROCESS FOR NITROGEN OXIDES IN WASTE GAS.
12355 APTIC NO. 29677

GAS CHROMATOGRAPHIC ANALYSIS OF TRACES OF CO AND CO2.
12326 APTIC NO. 29938

DETECTION OF THE TOTAL AMOUNT OF ORGANIC SUBSTANCES IN THE DISCHARGED AIR FROM THE PRODUCTION OF SYNTHETIC FATTY ACIDS.
12334 APTIC NO. 29983

CALCULATION METHODS OF SPECTRAL ABSORPTION OF INFRARED RADIATION BY ATMOSPHERIC GASES.
12323 APTIC NO. 30103

CORRECTION: DETERMINATION OF HYDROGEN SULFIDE, SULFUR DIOXIDE, CARBONYL SULFIDE, CARBON DISULFIDE, AND CARBON DIOXIDE IN A GAS MIXTURE.
12341 APTIC NO. 30120

THE PREVENTION OF POLLUTION.
12416 APTIC NO. 29623

ATMOSPHERIC REACTIONS AND SCAVENGING PROCESSES.
12426 APTIC NO. 29774

AIR POLLUTION IN AN URBAN ENVIRONMENT.
12413 APTIC NO. 30045

INITIATION RATE FOR SHOCK-HEATED HYDROGEN-OXYGEN CARBON MONOXIDE- ARGON MIXTURES AS DETERMINED BY OH INDUCTION TIME MEASUREMENTS.
12490 APTIC NO. 29700

INSTRUMENT FOR STUDYING THE ACTION OF EXHAUST GASES DILUTED IN THE AIR, ON BACTERIAL, CELLULAR, AND TISSULAR CULTURES.
12476 APTIC NO. 29849

SIMULTANEOUS ABSORPTION OF TWO GASES ACCOMPANIED BY REVERSIBLE INSTANTANEOUS CHEMICAL REACTIONS.
12504 APTIC NO. 29917

EXPERIMENTAL FUNCTIONS OF INTEGRAL ABSORPTION IN H2O, AND CO2, N2O, CH4, CO, NO VAPOUR BANDS.
12502 APTIC NO. 29964

ELECTRON ENERGY LOSS SPECTRA OF NO2 AND SO2.
12480 APTIC NO. 30079

RENAL FUNCTION DURING PROLONGED EXPOSURE TO HYPOXIA AND CARBON MONOXIDE. I. GLOMERULAR FILTRATION AND PLASMA FLOW.
12576 APTIC NO. 29615

AIR POLLUTION.
12575 APTIC NO. 29949

ATMOSPHERIC CARBON DIOXIDE AND THE BIOSPHERE.
12593 APTIC NO. 30078

EFFECT OF LOW SILICIUM CONTENT AND SOME SURFACE TREATMENT ON THE OXIDATION OF CARBON STEELS IN CARBON DIOXIDE ATMOSPHERES AT MEDIUM TEMPERATURES.
12611 APTIC NO. 29995

IT BEGAN WITH THE SMOG IN CALIFORNIA. CALIFORNIA TEST, EUROPEAN TEST--INTERNATIONAL REGULATIONS OF AUTOMOBILE EXHAUST GAS EMISSIONS.
12640 APTIC NO. 30069

INDUSTRIAL EMISSIONS: AN ANALYSIS OF SOME KEY FACTORS.
12669 APTIC NO. 29469

NEW TREND IN POLLUTIONS COUNTERMEASURES IN THE 70 S.
12660 APTIC NO. 29507

MATERIALS FOR REFERENCE ABOUT ENVIRONMENTAL POLLUTION CONTROL.
12651 APTIC NO. 29818

CASTING WORK ENVIRONMENTS AND PUBLIC NUISANCE.
12655 APTIC NO. 29975

OUR ENVIRONMENT--OPTIONS ON THE WAY INTO THE FUTURE.
12675 APTIC NO. 29722

CARBON DISULFIDE

CORRECTION: DETERMINATION OF HYDROGEN SULFIDE, SULFUR DIOXIDE, CARBONYL SULFIDE, CARBON DISULFIDE, AND CARBON DIOXIDE IN A GAS MIXTURE.
12341 APTIC NO. 30120

SPECTROSCOPIC STUDIES OF PORPHYRINS, PHTHALOCYANINES, AND CS2 IN INERT MATRICES.
12471 APTIC NO. 30050

COLLECTION OF LEGISLATIONS RELATED WITH MITI CONCERNING POLLUTIONS.
12646 APTIC NO. 29504

CARBON MONOXIDE

THE PHYSIOLOGY OF CARBON MONOXIDE PRODUCTION BY DEEP-SEA COELENTERATES: CAUSES AND CONSEQUENCES.
12032 APTIC NO. 27292

COMBUSTION REGULARITY A KEY TO SPARK-IGNITION ENGINE EMISSIONS REDUCTION? Preprint, Academia R. P. R., Bucharest, 15p., 1970. 4 refs. (Presented at the Internal Combustion Engines Conference, 2nd International, Bucharest (Rumania), 1970.)
12023 APTIC NO. 27641

THE EXHAUST GAS COMPOSITION AT THE FM GASOLINE ENGINE.
12046 APTIC NO. 29516

AIR POLLUTANTS GENERATED IN INTRA-FURNACE COMBUSTION.
12020 APTIC NO. 29532

ATMOSPHERIC POLLUTION IN HEADINGS FOLLOWING SHOTFIRING.
12024 APTIC NO. 29678

EMISSION OF AIR POLLUTANTS FROM AIRCRAFT JET ENGINES.
12035 APTIC NO. 29734

PHYSICAL-CHEMICAL PROBLEMS OF AIR POLLUTION.
11996 APTIC NO. 29786

COUNTERMEASURES ON AUTOMOBILE EXHAUST GAS.
12050 APTIC NO. 29935

STUDY OF THE COMBUSTION OF PARTLY PRE-MIXED LAMINAR NATURAL GAS FLAMES.
12021 APTIC NO. 29948

CLOSE SCRUTINY OF AUTOMOBILE EXHAUST GASES. TECHNICAL INSPECTION SERVICE FOR AUTOMOBILES IN NEW PREMISES.
12005 APTIC NO. 30002

THE SE-DUCT--AN IDEAL SOLUTION FOR GAS HEATERS.
12002 APTIC NO. 30132

PURIFICATION DEVICE FOR AUTOMOTIVE EXHAUST GAS.
12156 APTIC NO. 29439

CARBON MONOXIDE AS A COMBUSTION CONTROL PARAMETER.
12072 APTIC NO. 29471

UTILIZATION OF CATALYST IN AIR POLLUTION CONTROL (4).
12239 APTIC NO. 29477

DUST COLLECTOR FOR ELECTRIC FURNACE MANUFACTURING FERROALLOY.
12123 APTIC NO. 29481

COMPARISON OF THE CATALYTIC ACTIVITY OF MANGANESE DIOXIDE OF ELECTROLYTIC ORIGIN AND OF MANGANESE HYDROXIDE IN THE OXIDATION OF CARBON OXIDES. IV. ADSORPTION AND DESORPTION OF THE REAGENTS AND THE PRODUCTS OF THE REACTION ON MANGANESE HYDROXIDE.
12192 APTIC NO. 29506

EXPERIMENTS CONCERNING STOICHIOMETRIC COMBUSTION IN OIL-FIRED FURNACES OF FRENCH POWER PLANTS.
12090 APTIC NO. 29513

EXHAUST GAS CLEANER FOR DIESEL ENGINES.
12221 APTIC NO. 29533

CO BOILER OF FLUIDIZED BED TYPE CATALYTIC CRACKING PROCESS PRODUCIN NO LEAD GASOLINE.
12237 APTIC NO. 29535

TRANSPORTATION EMISSIONS.
12175 APTIC NO. 29605

AIR POLLUTION: CONTROLLED OPERATION OF A NSSC RECOVERY FURNACE.
12127 APTIC NO. 29621

EMISSION CONTROL BY EXHAUST MANIFOLD REACTOR--AN INITIAL STUDY FOR SMALL ENGINES.
12163 APTIC NO. 29629

THE AUTOMOBILE AND AIR POLLUTION.
12186 APTIC NO. 29633

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

EFFECTS OF THE ADDITION OF BARIUM COMPOUND ON THE SMOKE CONCENTRATION OF DIESEL EXHAUST GAS.
12057 APTIC NO. 29696

ADSORPTION OF HYDROGEN AND CARBON MONOXIDE AND THEIR MIXTURES ON IRON FISCHER-TROPSCH

CATALYSTS. PART I: SYNTHESIS EXPERIMENTS AND ADSORPTION STUDIES WITH HYDROGEN AND CARBON MONOXIDE ON PROMOTED AND UNPROMOTED IRON CATALYSTS.
12216 APTIC NO. 29701

EXHAUST SYSTEM.
12165 APTIC NO. 29723

NEW METHOD OF MANUFACTURING CATALYST FOR EXHAUST GAS.
12133 APTIC NO. 29733

CATALYTIC OXIDATION OF CARBON MONOXIDE IN THE PRESENCE OF RECENTLY SYNTHESIZED PLATINUM COMPLEXES.
12117 APTIC NO. 29896

UTILIZATION OF CATALYST IN AIR POLLUTION CONTROL (5).
12240 APTIC NO. 29898

CONTROL OF EXHAUST GAS EMISSION OF MITSUBISHI COLT GALANT.
12228 APTIC NO. 29901

EXHAUST GAS PURIFIER.
12179 APTIC NO. 29905

ATTEMPT AT A THERMODYNAMIC SOLUTION: AUTOMOBILE EXHAUST GASES.
12147 APTIC NO. 29906

METHOD TO MANUFACTURE CATALYST FOR CLEANING OF EXHAUST GAS FROM INTERNAL COMBUSTION ENGINES.
12150 APTIC NO. 29937

THE EFFECT OF CATALYST POISONS ON THE ACTIVITY OF CARBON MONOXIDE SHIFT CATALYSTS.
12212 APTIC NO. 29944

CAN ADDITIVES DECREASE DIESEL SMOKE? Power, 114(8):60, Aug. 1970.
12216 APTIC NO. 29701

WASTE GAS RECIRCULATION IN COMBUSTION ENGINES, PRIMARILY DIESEL ENGINES.
12181 APTIC NO. 29962

COMBUSTION OF WASTES CENTERING AROUND REMOVAL OF NOXIOUS GAS.
12077 APTIC NO. 29985

CATALYTIC REDUCTION OF SULFUR DIOXIDE ON IRON-ALUMINA BIFUNCTIONAL CATALYSTS.
12152 APTIC NO. 30064

FIRST RESULTS WITH THE M.A.N.-EXPERIMENTAL GAS TURBINE FOR COMMERCIAL VEHICLES.
12131 APTIC NO. 30088

INFRARED SPECTROSCOPIC STUDY OF THE CATALYTIC OXIDATION OF CARBON MONOXIDE TO CARBON DIOXIDE ON MANGANESE DIOXIDE.
12105 APTIC NO. 30091

EXHAUST EMISSIONS FROM HEAVY DUTY VEHICLES.
12332 APTIC NO. 27631

THE MEASUREMENT OF ATMOSPHERIC POLLUTION IN GERMANY.
12340 APTIC NO. 29066

A GAS ANALYSER FOR THE MEASUREMENT OF IMPURITIES IN AIR.
12277 APTIC NO. 29581

ANALYZERS FOR MONITORING AIR QUALITY IN POLLUTION.
12272 APTIC NO. 29634

EXHAUST GAS EVALUATION BY AIR RATIO COEFFICIENTS.
12278 APTIC NO. 29638

JIS ANALYTICAL PROCESS FOR NITROGEN OXIDES IN WASTE GAS.
12355 APTIC NO. 29677

POLLUTION TESTS ON IDLING GASOLINE MOTORS.
12251 APTIC NO. 29765

ENVIRONMENTAL POLLUTION AND ITS MEASUREMENTS (II).
12338 APTIC NO. 29843

GAS CHROMATOGRAPHIC ANALYSIS OF TRACES OF CO AND CO2.
12326 APTIC NO. 29938

CALCULATION METHODS OF SPECTRAL ABSORPTION OF INFRARED RADIATION BY ATMOSPHERIC GASES.
12323 APTIC NO. 30103

REPORT ON LEAD POLLUTION SURVEY.
12361 APTIC NO. 29465

AIR POLLUTION BY EXHAUST GAS II. DETERMINATION OF LEAD AND CARBON MONOXIDE INSIDE A GARAGE AND A REPAIR FACTORY IN TOKYO CITY.
12397 APTIC NO. 29576

STATISTICAL ANALYSES OF AIR POLLUTION SAMPLING FREQUENCY IN AN EPIDEMIOLOGIC STUDY.
12378 APTIC NO. 29655

URBAN POLLUTION BY AUTOMOBILE EXHAUST GAS.
12387 APTIC NO. 29744

POLLUTIONS AND TOKYO METROPOLITAN GOVERNMENT.
12365 APTIC NO. 29973

STUDIES ON AIR POLLUTION DUE TO AUTOMOBILE EXHAUST. REPORT 15: AIR POLLUTION AT THE VICINITY OF BOOTHS IN MEISHIN HIGHWAY.
12389 APTIC NO. 30075

INDOOR/OUTDOOR AIR QUALITY RELATIONSHIPS.
12398 APTIC NO. 30090

PROBLEMS OF AIR POLLUTION AND MEASURES TO COMBAT IT IN EL PASO, TEXAS.
12368 APTIC NO. 30094

EXPERIMENT ON PHOTOCHEMICAL REACTION OF MOTOR EXHAUST GAS.
12469 APTIC NO. 29500

EPISODE 104.
12410 APTIC NO. 29695

ATMOSPHERIC REACTIONS AND SCAVENGING PROCESSES.
12426 APTIC NO. 29774

CARBON MONOXIDE IN RAINWATER.
12460 APTIC NO. 29880

EFFECTS OF ATMOSPHERIC CONDITIONS ON AUTOMOBILE EXHAUST GAS COMPOSITIONS.
12461 APTIC NO. 29893

AIR POLLUTION IN AN URBAN ENVIRONMENT.
12413 APTIC NO. 30045

ON PLUMBIC POLLUTION OF MUNICIPAL ATMOSPHERE--BEHAVIORS OF PLUMBIC COMPOUND AS AEROSOL.
12431 APTIC NO. 30073

BORDEAUX. STUDY OF ATMOSPHERIC POLLUTION IN THE BUILT-UP AREA.
12420 APTIC NO. 30109

IGNITION KINTICS IN HIGH-TEMPERATURE OXIDATION WITH NITROUS OXIDE IN SHOCK WAVES.
12509 APTIC NO. 29095

CHEMICAL APPLICATIONS OF METASTABLE ARGON ATMOS.
12519 APTIC NO. 29632

THE SCATTERING OF THERMAL ELECTRONS BY CARBON MONOXIDE.
12484 APTIC NO. 29654

INITIATION RATE FOR SHOCK-HEATED HYDROGEN-OXYGEN CARBON MONOXIDE- ARGON MIXTURES AS DETERMINED BY OH INDUCTION TIME MEASUREMENTS.
12490 APTIC NO. 29700

RATES OF ENERGY TRANSFER FROM N2 A CUBED SIGMA(+) U TO VARIOUS MOLECULES. INITIAL AND FINAL QUANTUM STATES IN THE TRANSFER TO NOX SQUARED PI AND HG(6 1S SUB O), AND VIBRATIONAL RELAXATION OF N2 A CUBED SIGMA(+) U (V EQUALS 1) IN HELIUM.
12481 APTIC NO. 29750

THE ADSORPTION OF CARBON MONOXIDE ON CU(001) LEED AND AUGER EMISSION STUDIES.
12496 APTIC NO. 29799

INSTRUMENT FOR STUDYING THE ACTION OF EXHAUST GASES DILUTED IN THE AIR, ON BACTERIAL, CELLULAR, AND TISSULAR CULTURES.
12476 APTIC NO. 29849

HETEROGENEOUS CATALYSIS INVOLVING ASTOICHIOMETRIC COMPONENTS. IV. INITIATION EFFECTS OF CARBON MONOXIDE AND OXYGEN OXIDE IN THE HYDROPOLYMERIZATION OF PROPENE AND ISOBUTENE.
12488 APTIC NO. 29871

REDUCTION OF MAGNESIUM SULPHATE BY CARBON MONOXIDE.
12498 APTIC NO. 29943

EXPERIMENTAL FUNCTIONS OF INTEGRAL ABSORPTION IN H2O, AND CO2, N2O, CH4, CO, NO VAPOUR BANDS.
12502 APTIC NO. 29964

RAPID ASSESSMENT OF TESTS OF POLLUTANT EFFECTS IN MAN.
12536 APTIC NO. 29431

LOW LEVEL CARBON MONOXIDE EXPOSURE AND HUMAN PSYCHOMOTOR PERFORMANCE.
12573 APTIC NO. 29473

INTRODUCTION AND GENERAL DESCRIPTION OF THE STUDY AND OF THE PROCEDURES FOR PROLONGED EXPOSURE TO CARBON MONOXIDE AND HYPOXIA.
12530 APTIC NO. 29503

OXYGEN AFFINITY AND ACID-BASE STATUS OF HUMAN BLOOD DURING EXPOSURE TO HYPOXIA AND CARBON MONOXIDE.
12567 APTIC NO. 29528

INFLUENCE OF PROLONGED CARBON MONOXIDE EXPOSURE AND ALTITUDE HYPOXIA ON SERUM LIPIDS IN MAN.
12558 APTIC NO. 29529

EFFECTS OF LOW CARBON MONOXIDE CONCENTRATIONS IN MAN.
12533 APTIC NO. 29609

INFLUENCE OF PROLONGED CARBON MONOXIDE EXPOSURE AND HIGH ALTITUDE ON THE COMPOSITION OF BLOOD AND URINE IN MAN.
12559 APTIC NO. 29613

PLASMA VOLUME AND VASCULAR PERMEABILITY DURING HYPOXIA AND CARBON MONOXIDE EXPOSURE.
12582 APTIC NO. 29614

CARBON MONOXIDE AS TOXIC GAS.
12538 APTIC NO. 29640

EFFECT OF LONG-TERM JOINT ACTION OF CARBON MONOXIDE, NITROGEN DIOXIDE AND AMMONIUM ON REQUIREMENTS OF ALBINO RATS IN VITAMIN B6.
12572 APTIC NO. 29753

CAPILLARY FILTRATION RATE ON THE HUMAN CALF DURING EXPOSURE TO CARBON MONOXIDE AND HYPOXIA (3454 M).
12578 APTIC NO. 29804

RENAL FUNCTION DURING PROLONGED EXPOSURE TO HYPOXIA AND CARBON MONOXIDE. II. ELECTROLYTE HANDLING.
12577 APTIC NO. 29805

CATECHOLAMINE-INDEPENDENT GLYCOGENOLYSIS IN BRAIN DURING CARBON MONOXIDE POISONING.
12545 APTIC NO. 29835

RECENT RESEARCH INTO THE EFFECT OF LOW LEVEL CARBON MONOXIDE EXPOSURE ON PSYCHOMOTOR PERFORMANCE IN HEALTHY HUMANS.
12574 APTIC NO. 29846

CIRCULATION, METABOLISM, AND VENTILATION DURING PROLONGED EXPOSURE TO CARBON MONOXIDE AND TO HIGH ALTITUDE.
12560 APTIC NO. 29869

EXPERIMENTAL STUDIES ON THE HEALTH EFFECTS OF AUTO EXHAUST GAS IN LOW CONCENTRATIONS. (REPORT 1) PRELIMINARY EXPERIMENT.
12589 APTIC NO. 29921

AIR POLLUTION.
12575 APTIC NO. 29949

SOME HEALTH SURVEY RESULTS OF UNDERGROUND GARAGE WORKERS.
12568 APTIC NO. 30074

CARBON MONOXIDE AND SURVIVAL FROM MYOCARDIAL INFARCTION.
12541 APTIC NO. 30127

ATMOSPHERIC POLLUTANTS FRENCH LEGISLATION. STANDARD MEASURING METHODS. RECENT COMMERCIAL APPARATUS.
12638 APTIC NO. 29003

UNLEADED GASOLINE AND SMOG-FREE AUTOS--HOW AND WHY.
12644 APTIC NO. 30035

IT BEGAN WITH THE SMOG IN CALIFORNIA. CALIFORNIA TEST, EUROPEAN TEST--INTERNATIONAL REGULATIONS OF AUTOMOBILE EXHAUST GAS EMISSIONS.
12640 APTIC NO. 30069

INDUSTRIAL EMISSIONS: AN ANALYSIS OF SOME KEY FACTORS.
12669 APTIC NO. 29469

COLLECTION OF LEGISLATIONS RELATED WITH MITI CONCERNING POLLUTIONS.
12646 APTIC NO. 29504

PRESENT SITUATION OF ADMINISTRATION CONCERNING POLLUTIONS.
12648 APTIC NO. 29598

MATERIALS FOR REFERENCE ABOUT ENVIRONMENTAL POLLUTION CONTROL.
12651 APTIC NO. 29818

POPULATION PLANTS TREES: ENVIRONMENTAL PROTECTION IN JAPAN.
12652 APTIC NO. 29859

TOKYO FIGHTS POLLUTION. AN URGENT APPEAL FOR REFORM.
12653 APTIC NO. 29888

THE EVOLUTION OF AIR POLLUTION CONTROL LAWS.
12672 APTIC NO. 30020

NOBODY BREATHES FRESH AIR. FACTS AND ARGUMENTS ABOUT AIR POLLUTION.
12677 APTIC NO. 29459

CARBONATES

INFRARED SPECTROSCOPIC STUDY OF THE CATALYTIC OXIDATION OF CARBON MONOXIDE TO CARBON DIOXIDE ON MANGANESE DIOXIDE.
12105 APTIC NO. 30091

PARTICLE SIZE MEASURING WITH THE TELEVISION MICROSCOPE QUANTIMET FOR SIZES MINUS 4 MICRONS.
12304 APTIC NO. 29512

BORDEAUX. STUDY OF ATMOSPHERIC POLLUTION IN THE BUILT-UP AREA.
12420 APTIC NO. 30109

STUDIES OF THE SIGNIFICANCE OF DUSTS AND GASES FOR THE PATHOLOGY OF INFECTIONS OF THE RESPIRATORY TRACT.
12529 APTIC NO. 29571

CARBONYLS

CATALYTIC OXIDATION OF CARBON MONOXIDE IN THE PRESENCE OF RECENTLY SYNTHESIZED PLATINUM COMPLEXES.
12117 APTIC NO. 29896

CORRECTION: DETERMINATION OF HYDROGEN SULFIDE, SULFUR DIOXIDE, CARBONYL SULFIDE, CARBON DISULFIDE, AND CARBON DIOXIDE IN A GAS MIXTURE.
12341 APTIC NO. 30120

A FEW OBSERVATION ON THE GENERATION MECHANISM OF OBNOXIOUS ODOR.
12517 APTIC NO. 29649

THE REACTION OF OZONE WITH SOLID POLYSTYRENE.
12505 APTIC NO. 29666

COLLECTION OF LEGISLATIONS RELATED WITH MITI CONCERNING POLLUTIONS.
12646 APTIC NO. 29504

CARBOXYHEMOGLOBIN

RAPID ASSESSMENT OF TESTS OF POLLUTANT EFFECTS IN MAN.
12536 APTIC NO. 29431

LOW LEVEL CARBON MONOXIDE EXPOSURE AND HUMAN PSYCHOMOTOR PERFORMANCE.
12573 APTIC NO. 29473

INTRODUCTION AND GENERAL DESCRIPTION OF THE STUDY AND OF THE PROCEDURES FOR PROLONGED EXPOSURE TO CARBON MONOXIDE AND HYPOXIA.
12530 APTIC NO. 29503

EFFECTS OF LOW CARBON MONOXIDE CONCENTRATIONS IN MAN.
12533 APTIC NO. 29609

INFLUENCE OF PROLONGED CARBON MONOXIDE EXPOSURE AND HIGH ALTITUDE ON THE COMPOSITION OF BLOOD AND URINE IN MAN.
12559 APTIC NO. 29613

CARBON MONOXIDE AS TOXIC GAS.
12538 APTIC NO. 29640

RECENT RESEARCH INTO THE EFFECT OF LOW LEVEL CARBON MONOXIDE EXPOSURE ON PSYCHOMOTOR PERFORMANCE IN HEALTHY HUMANS.
12574 APTIC NO. 29846

SOME HEALTH SURVEY RESULTS OF UNDERGROUND GARAGE WORKERS.
12568 APTIC NO. 30074

CARBURETION

VEHICLE EMISSIONS.
12027 APTIC NO. 29894

EMISSION CONTROL BY EXHAUST MANIFOLD REACTOR--AN INITIAL STUDY FOR SMALL ENGINES.
12163 APTIC NO. 29629

CONTROL OF EXHAUST GAS EMISSION OF MITSUBISHI COLT GALANT.
12228 APTIC NO. 29901

EFFECTS OF ATMOSPHERIC CONDITIONS ON AUTOMOBILE EXHAUST GAS COMPOSITIONS.
12461 APTIC NO. 29893

CARCINOGENS

PULMONARY COMPLICATIONS OF ASBESTOS EXPOSURE.
12552 APTIC NO. 29221

ON THE PROBLEM OF THE COMBINED EFFECTS OF SULFUR DIOXIDE AND BENZPYRENE ON THE ORGANISMS OF TEST ANIMALS.
12583 APTIC NO. 29585

THE ROLE OF TRACE METALS IN CHEMICAL CARCINOGENESIS: ASBESTOS CANCERS.
12543 APTIC NO. 29993

CARDIOVASCULAR DISEASES

RAPID ASSESSMENT OF TESTS OF POLLUTANT EFFECTS IN MAN.
12536 APTIC NO. 29431

PATHOLOGICAL STUDY ON THE EXPERIMENTAL RABBITS AT AIR-POLLUTED AREA IN YOKKAICHI.
12590 APTIC NO. 29502

ON THE RELATIONSHIP BETWEEN AIR POLLUTION AND MORBIDITY AND MORTALITY OF THE POPULATION IN POLISH TOWNS.
12563 APTIC NO. 29575

ATMOSPHERIC POLLUTIONS AND HEALTH.
12537 APTIC NO. 29971

CARBON MONOXIDE AND SURVIVAL FROM MYOCARDIAL INFARCTION.
12541 APTIC NO. 30127

FEDERALISM MAKES ENVIRONMENTAL PROTECTION DIFFICULT.
12654 APTIC NO. 29969

CASCADE SAMPLERS

DETERMINATION OF LEAD CONTENTS IN AUTOMOBILE EXHAUST GAS.
12013 APTIC NO. 29661

METHOD TO ARREST AND REMOVE WHITE SMOKE PRODUCED FROM MOLTEN ZINC PLATING PROCESS.
12135 APTIC NO. 29940

REVIEW OF CASCADE IMPACTORS FOR PARTICLE SIZE ANALYSIS AND A NEW CALIBRATION FOR THE CASELLA CASCADE IMPACTOR.
12311 APTIC NO. 29270

PROGRESS IN MEASUREMENT OF AIR POLLUTION.
12350 APTIC NO. 29748

SCAVENGING OF AEROSOL PARTICLES BY SPRAYS.
12437 APTIC NO. 29711

CATALYSIS

OIL REFINERS PREPARE FOR ANIT-POLLUTION CONTROLS.
12040 APTIC NO. 29127

EXPERIMENTAL STUDY ON PLASTICS INCINERATION.
12017 APTIC NO. 29841

DECONTAMINATION OF POLLUTED AIR FROM HARD PITCH PRODUCTION PLANT.
12022 APTIC NO. 30026

BASIC RESEARCH ON SMOKE DESULFURIZATION BY LIME-METALS, 2ND REPORT - EFFECT OF METAL ADDITION ON CALCINATION OF LIME.
12153 APTIC NO. 29080

UTILIZATION OF CATALYST IN AIR POLLUTION CONTROL (4).
12239 APTIC NO. 29477

GULF RESIDUAL OIL HDS PROCESS.
12136 APTIC NO. 29501

COMPARISON OF THE CATALYTIC ACTIVITY OF MANGANESE DIOXIDE OF ELECTROLYTIC ORIGIN AND OF MANGANESE HYDROXIDE IN THE OXIDATION OF CARBON OXIDES. IV. ADSORPTION AND DESORPTION OF THE REAGENTS AND THE PRODUCTS OF THE REACTION ON MANGANESE HYDROXIDE.
12192 APTIC NO. 29506

HYDROGENIZATION DESULFURIZATION METHOD OF HEAVY HC.
12189 APTIC NO. 29603

TRANSPORTATION EMISSIONS.
12175 APTIC NO. 29605

MODERN SULFURIC ACID TECHNOLOGY.
12093 APTIC NO. 29607

ADSORPTION OF HYDROGEN AND CARBON MONOXIDE AND THEIR MIXTURES ON IRON FISCHER-TROPSCH CATALYSTS. PART I: SYNTHESIS EXPERIMENTS AND ADSORPTION STUDIES WITH HYDROGEN AND CARBON MONOXIDE ON PROMOTED AND UNPROMOTED IRON CATALYSTS.
12216 APTIC NO. 29701

ASPHALTENE HYDRODESULFURIZATION WITH SMALL CATALYST PARTICLES DISPOSED IN A GUARD CHAMBER-MAIN REACTOR SYSTEM.
12121 APTIC NO. 29719

NEW METHOD OF MANUFACTURING CATALYST FOR EXHAUST GAS.
12133 APTIC NO. 29733

DESULFURIZATION.
12242 APTIC NO. 29742

MANUFACTURING OF INDUSTRIAL CATALYST COMPRISING ALUMINA AS CARRIER. (Arumina o tantai to shita kogyo shokubai no seizo). Text in Japanese. Preprint, Japan Industrial Technology Assoc., Tokyo, 12p., 1970. 5 refs. (Presented at the Industrial Catalyst Seminar Tokyo, Japan, Nov. 9, 1970.)
12158 APTIC NO. 29755

REMOVAL OF CHLORINE FROM GASES.
12177 APTIC NO. 29802

H-OIL AS A TOOL FOR LOW SULFUR FUEL PRODUCTION.
12126 APTIC NO. 29808

ELECTRIC DUST COLLECTION DEVICE.
12151 APTIC NO. 29819

CATALYTIC OXIDATION OF CARBON MONOXIDE IN THE PRESENCE OF RECENTLY SYNTHESIZED PLATINUM COMPLEXES.
12117 APTIC NO. 29896

UTILIZATION OF CATALYST IN AIR POLLUTION CONTROL (5).
12240 APTIC NO. 29898

DIRECT DESULFURIZATION OF HEAVY OIL.
12111 APTIC NO. 29908

ESSO/UNION FUEL OIL HYDRODESULFURIZATION PROCESSES. PART II: COMMERCIAL EXPERIENCE WITH GO-FINING.
12096 APTIC NO. 29926

INVESTIGATION OF HEAVY OIL DESULFURIZATION IN FIXED-BED CONTACT REACTORS.
12196 APTIC NO. 29931

CONTACT HYDRODESULFURIZATION OF PETROLEUM RESIDUAL OIL.
12200 APTIC NO. 29932

HYDRODESULFURIZATION OF HEAVY QUALITY OIL, RESIDUAL OIL, ETC.. (Jushitsuyu, zansayu to no suisokadatsuryuho). Text in Japanese. (Ishikawajima-Harima Heavy Industries (Japan)) Japan. Pat. Sho 46-819. 3p., Jan. 9, 1971. (Appl. Dec. 25, 1967, claims not given).
12218 APTIC NO. 29933

METHOD TO MANUFACTURE CATALYST FOR CLEANING OF EXHAUST GAS FROM INTERNAL COMBUSTION ENGINES.
12150 APTIC NO. 29937

THE EFFECT OF CATALYST POISONS ON THE ACTIVITY OF CARBON MONOXIDE SHIFT CATALYSTS.
12212 APTIC NO. 29944

METHOD TO MANUFACTURE CATALYST FOR DESULFURIZATION BY HYDROGEN ADDITION OF LIQUID HYDROCARBON.
12234 APTIC NO. 29974

CATALYST FOR HEAVY OIL DESULFURIZATION.
12224 APTIC NO. 29977

USE OF VANADIUM CATALYSTS IN PURIFYING INDUSTRIAL WASTE GASES FROM SULFUR DIOXIDE.
12087 APTIC NO. 29980

COMBUSTION OF WASTES CENTERING AROUND REMOVAL OF NOXIOUS GAS.
12077 APTIC NO. 29985

REACTOR DEVICE FOR HEAVY OIL DESULFURIZATION.
12149 APTIC NO. 29987

METHOD FOR MANUFACTURING SPHERICAL ACTIVE CARBON FROM COAL.
12141 APTIC NO. 29988

STUDY ON THE DIRECT DESULFURIZATION OF HEAVY OIL.
12159 APTIC NO. 29989

ELIMINATION OF OXIDES CONTAINED IN CERTAIN RESIDUAL INDUSTRIAL GASES.
12129 APTIC NO. 30043

CATALYTIC REDUCTION OF SULFUR DIOXIDE ON IRON-ALUMINA BIFUNCTIONAL CATALYSTS.
12152 APTIC NO. 30064

DISPOSAL OF HC FROM OIL CONTAINING RESIDUAL OIL AFTER DISTILLATION USING HYDROGEN.
12162 APTIC NO. 30095

SUMMARY OF H2SO4 MANUFACTURE.
12068 APTIC NO. 30099

GAS CHROMATOGRAPHIC ANALYSIS OF TRACES OF CO AND CO2.
12326 APTIC NO. 29938

FRACTIONATION OF OXYGEN ISOTOPES BETWEEN NO AND H20.
12297 APTIC NO. 30114

NO-X CONTROL FROM STATIONARY SOURCES.
12427 APTIC NO. 29764

THE ULTRA-VIOLET PHOTOLYSIS OF OZONE IN THE PRESENCE OF WATER VAPOUR.
12435 APTIC NO. 30012

SCALE-UP OF LABORATORY FLUID-BED DATA: THE SIGNIFICANCE OF SLUG FLOW.
12501 APTIC NO. 29494

HETEROGENEOUS CATALYSIS INVOLVING ASTOICHIOMETRIC COMPONENTS. IV. INITIATION EFFECTS OF CARBON MONOXIDE AND OXYGEN OXIDE IN THE HYDROPOLYMERIZATION OF PROPENE AND ISOBUTENE.
12488 APTIC NO. 29871

THE MECHANISM OF ATMOSPHERIC RUSTING AND THE EFFECT OF CU AND P ON THE RUST FORMATION OF LOW ALLOY STEELS.
12615 APTIC NO. 29631

UNLEADED GASOLINE AND SMOG-FREE AUTOS--HOW AND WHY.
12644 APTIC NO. 30035

CATALYSTS

OIL REFINERS PREPARE FOR ANIT-POLLUTION CONTROLS.
12040 APTIC NO. 29127

DECONTAMINATION OF POLLUTED AIR FROM HARD PITCH PRODUCTION PLANT.
12022 APTIC NO. 30026

BASIC RESEARCH ON SMOKE DESULFURIZATION BY LIME-METALS, 2ND REPORT - EFFECT OF METAL ADDITION ON CALCINATION OF LIME.
12153 APTIC NO. 29080

UTILIZATION OF CATALYST IN AIR POLLUTION CONTROL (4).
12239 APTIC NO. 29477

GULF RESIDUAL OIL HDS PROCESS.
12136 APTIC NO. 29501

COMPARISON OF THE CATALYTIC ACTIVITY OF MANGANESE DIOXIDE OF ELECTROLYTIC ORIGIN AND OF MANGANESE HYDROXIDE IN THE OXIDATION OF CARBON OXIDES. IV. ADSORPTION AND DESORPTION OF THE REAGENTS AND THE PRODUCTS OF THE REACTION ON MANGANESE HYDROXIDE.
12192 APTIC NO. 29506

TRANSPORTATION EMISSIONS.
12175 APTIC NO. 29605

MODERN SULFURIC ACID TECHNOLOGY.
12093 APTIC NO. 29607

ADSORPTION OF HYDROGEN AND CARBON MONOXIDE AND THEIR MIXTURES ON IRON FISCHER-TROPSCH CATALYSTS. PART I: SYNTHESIS EXPERIMENTS AND ADSORPTION STUDIES WITH HYDROGEN AND CARBON MONOXIDE ON PROMOTED AND UNPROMOTED IRON CATALYSTS.
12216 APTIC NO. 29701

ASPHALTENE HYDRODESULFURIZATION WITH SMALL CATALYST PARTICLES DISPOSED IN A GUARD CHAMBER-MAIN REACTOR SYSTEM.
12121 APTIC NO. 29719

NEW METHOD OF MANUFACTURING CATALYST FOR EXHAUST GAS.
12133 APTIC NO. 29733

DESULFURIZATION.
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12158 APTIC NO. 29755

REMOVAL OF CHLORINE FROM GASES.
12177 APTIC NO. 29802

ELECTRIC DUST COLLECTION DEVICE.
12151 APTIC NO. 29819

CATALYTIC OXIDATION OF CARBON MONOXIDE IN THE PRESENCE OF RECENTLY SYNTHESIZED PLATINUM COMPLEXES.
12117 APTIC NO. 29896

UTILIZATION OF CATALYST IN AIR POLLUTION CONTROL (5).
12240 APTIC NO. 29898

INVESTIGATION OF HEAVY OIL DESULFURIZATION IN FIXED-BED CONTACT REACTORS.
12196 APTIC NO. 29931

CONTACT HYDRODESULFURIZATION OF PETROLEUM RESIDUAL OIL.
12200 APTIC NO. 29932

HYDRODESULFURIZATION OF HEAVY QUALITY OIL, RESIDUAL OIL, ETC.. (Jushitsuyu, zansayu to no suisokadatsuryuho). Text in Japanese. (Ishikawajima-Harima Heavy Industries (Japan)) Japan. Pat. Sho 46-819. 3p., Jan. 9, 1971. (Appl. Dec. 25, 1967, claims not given).
12218 APTIC NO. 29933

METHOD TO MANUFACTURE CATALYST FOR CLEANING OF EXHAUST GAS FROM INTERNAL COMBUSTION ENGINES.
12150 APTIC NO. 29937

THE EFFECT OF CATALYST POISONS ON THE ACTIVITY OF CARBON MONOXIDE SHIFT CATALYSTS.
12212 APTIC NO. 29944

METHOD TO MANUFACTURE CATALYST FOR DESULFURIZATION BY HYDROGEN ADDITION OF LIQUID HYDROCARBON.
12234 APTIC NO. 29974

CATALYST FOR HEAVY OIL DESULFURIZATION.
12224 APTIC NO. 29977

USE OF VANADIUM CATALYSTS IN PURIFYING INDUSTRIAL WASTE GASES FROM SULFUR DIOXIDE.
12087 APTIC NO. 29980

COMBUSTION OF WASTES CENTERING AROUND REMOVAL OF NOXIOUS GAS.
12077 APTIC NO. 29985

REACTOR DEVICE FOR HEAVY OIL DESULFURIZATION.
12149 APTIC NO. 29987

METHOD FOR MANUFACTURING SPHERICAL ACTIVE CARBON FROM COAL.
12141 APTIC NO. 29988

STUDY ON THE DIRECT DESULFURIZATION OF HEAVY OIL.
12159 APTIC NO. 29989

DISPOSAL OF HC FROM OIL CONTAINING RESIDUAL OIL AFTER DISTILLATION USING HYDROGEN.
12162 APTIC NO. 30095

GAS CHROMATOGRAPHIC ANALYSIS OF TRACES OF CO AND CO2.
12326 APTIC NO. 29938

HETEROGENEOUS CATALYSIS INVOLVING ASTOICHIOMETRIC COMPONENTS. IV. INITIATION EFFECTS OF CARBON MONOXIDE AND OXYGEN OXIDE IN THE HYDROPOLYMERIZATION OF PROPENE AND ISOBUTENE.
12488 APTIC NO. 29871

CATALYTIC ACTIVITY

EXPERIMENTAL STUDY ON PLASTICS INCINERATION.
12017 APTIC NO. 29841

UTILIZATION OF CATALYST IN AIR POLLUTION CONTROL (4).
12239 APTIC NO. 29477

GULF RESIDUAL OIL HDS PROCESS.
12136 APTIC NO. 29501

COMPARISON OF THE CATALYTIC ACTIVITY OF MANGANESE DIOXIDE OF ELECTROLYTIC ORIGIN AND OF MANGANESE HYDROXIDE IN THE OXIDATION OF CARBON OXIDES. IV. ADSORPTION AND DESORPTION OF THE REAGENTS AND THE PRODUCTS OF THE REACTION ON MANGANESE HYDROXIDE.
12192 APTIC NO. 29506

REMOVAL OF CHLORINE FROM GASES.
12177 APTIC NO. 29802

DIRECT DESULFURIZATION OF HEAVY OIL.
12111 APTIC NO. 29908

ESSO/UNION FUEL OIL HYDRODESULFURIZATION PROCESSES. PART II: COMMERCIAL EXPERIENCE WITH GO-FINING.
12096 APTIC NO. 29926

HYDRODESULFURIZATION OF HEAVY QUALITY OIL, RESIDUAL OIL, ETC.. (Jushitsuyu, zansayu to no suisokadatsuryuho). Text in Japanese. (Ishikawajima-Harima Heavy Industries (Japan)) Japan. Pat. Sho 46-819. 3p., Jan. 9, 1971. (Appl. Dec. 25, 1967, claims not given).
12218 APTIC NO. 29933

THE EFFECT OF CATALYST POISONS ON THE ACTIVITY OF CARBON MONOXIDE SHIFT CATALYSTS.
12212 APTIC NO. 29944

USE OF VANADIUM CATALYSTS IN PURIFYING INDUSTRIAL WASTE GASES FROM SULFUR DIOXIDE.
12087 APTIC NO. 29980

STUDY ON THE DIRECT DESULFURIZATION OF HEAVY OIL.
12159 APTIC NO. 29989

ELIMINATION OF OXIDES CONTAINED IN CERTAIN RESIDUAL INDUSTRIAL GASES.
12129 APTIC NO. 30043

THE ULTRA-VIOLET PHOTOLYSIS OF OZONE IN THE PRESENCE OF WATER VAPOUR.
12435 APTIC NO. 30012

THE MECHANISM OF ATMOSPHERIC RUSTING AND THE EFFECT OF CU AND P ON THE RUST FORMATION OF LOW ALLOY STEELS.
12615 APTIC NO. 29631

CATALYTIC AFTERBURNERS

OIL REFINERS PREPARE FOR ANIT-POLLUTION CONTROLS.
12040 APTIC NO. 29127

EXHAUST SYSTEM.
12165 APTIC NO. 29723

GASIFICATION OF HYDROCARBONS.
12137 APTIC NO. 29779

CATALYTIC OXIDATION

DECONTAMINATION OF POLLUTED AIR FROM HARD PITCH PRODUCTION PLANT.
12022 APTIC NO. 30026

TWO NEW PROCESSES FOR RECOVERY OF SULPHUR OXIDES FROM SMELTER GASES.
12207 APTIC NO. 29200

OXIDATION OF SODIUM SULFIDE AND MERCAPTIDE IN BLACK LIQUOR.
12071 APTIC NO. 29278

UTILIZATION OF CATALYST IN AIR POLLUTION CONTROL (4).
12239 APTIC NO. 29477

COMPARISON OF THE CATALYTIC ACTIVITY OF MANGANESE DIOXIDE OF ELECTROLYTIC ORIGIN AND OF MANGANESE HYDROXIDE IN THE OXIDATION OF CARBON OXIDES. IV. ADSORPTION AND DESORPTION OF THE REAGENTS AND THE PRODUCTS OF THE REACTION ON MANGANESE HYDROXIDE.
12192 APTIC NO. 29506

ODOR TREATMENT AND ITS COST AT RENDERING FACTORIES.
12211 APTIC NO. 29601

COUNTERMEASURES ON PREVENTION OF INDUSTRIAL POLLUTIONS--PART II ON SULFURIC ACID GAS.
12210 APTIC NO. 29646

EXHAUST SYSTEM.
12165 APTIC NO. 29723

ELECTRIC DUST COLLECTION DEVICE.
12151 APTIC NO. 29819

NEW PROCESS OFFERS 99.9% SULPHUR RECOVERY.
12062 APTIC NO. 29855

CATALYTIC OXIDATION OF CARBON MONOXIDE IN THE PRESENCE OF RECENTLY SYNTHESIZED PLATINUM COMPLEXES.
12117 APTIC NO. 29896

METHOD TO MANUFACTURE CATALYST FOR CLEANING OF EXHAUST GAS FROM INTERNAL COMBUSTION ENGINES.
12150 APTIC NO. 29937

DESULFURIZATION OF WASTE GASES AND FUELS.
12205 APTIC NO. 29957

USE OF VANADIUM CATALYSTS IN PURIFYING INDUSTRIAL WASTE GASES FROM SULFUR DIOXIDE.
12087 APTIC NO. 29980

FACTORS TO CONSIDER IN SELECTING AIR POLLUTION CONTROL EQUIPMENT.
12195 APTIC NO. 29996

PULPERS APPLY ODOR CONTROL.
12104 APTIC NO. 30062

INFRARED SPECTROSCOPIC STUDY OF THE CATALYTIC OXIDATION OF CARBON MONOXIDE TO CARBON DIOXIDE ON MANGANESE DIOXIDE.
12105 APTIC NO. 30091

REDUCING SO2 EMISSION FROM STATIONARY SOURCES.
12098 APTIC NO. 30102

AUTOMATED ANALYSIS SYSTEMS MAKES KRAFT EMISSION MEASUREMENTS EASY.
12325 APTIC NO. 29913

DETECTION OF THE TOTAL AMOUNT OF ORGANIC SUBSTANCES IN THE DISCHARGED AIR FROM THE PRODUCTION OF SYNTHETIC FATTY ACIDS.
12334 APTIC NO. 29983

INDUSTRIAL REACTION TO SULPHUR DIOXIDE CONTROL EQUIPMENT AND STANDARDS.
12637 APTIC NO. 29604

THE GUIDANCE STANDARD OF THE EQUIPMENT FOR TREATING EXHAUST GASES FROM THE FACTORY (FORMALDEHYDE):APR. 1970.
12636 APTIC NO. 29756

CATTLE

PROBLEMS OF FLUORINE EMISSION MEASUREMENTS.
12608 APTIC NO. 29736

THE EFFECTS OF LOW LEVEL FLUORINE POLLUTION IN A MOUNTAIN VALLEY.
12595 APTIC NO. 29991

AIR POLLUTION--THE STATUS TODAY.
12681 APTIC NO. 28923

CELL GROWTH

EFFECTS OF SOOT AND SMOKE ON THE HEALTH OF SCHOOL CHILDREN.
12556 APTIC NO. 29791

THE STUDY OF THE POLLUTED AIR INFLUENCE ON CHILDREN S HEALTH IN RUHRDISTRICT.
12544 APTIC NO. 29899

FEDERALISM MAKES ENVIRONMENTAL PROTECTION DIFFICULT.
12654 APTIC NO. 29969

CELL METABOLISM

DAMAGE TO PLANTS BY AIR POLLUTANTS.
12603 APTIC NO. 29746

CELLS

MERCURY IN MAN.
12011 APTIC NO. 29643

LEAD POLLUTION--A GROWING HAZARD TO PUBLIC HEALTH.
11999 APTIC NO. 29872

INSTRUMENT FOR STUDYING THE ACTION OF EXHAUST GASES DILUTED IN THE AIR, ON BACTERIAL, CELLULAR, AND TISSULAR CULTURES.
12476 APTIC NO. 29849

PATHOLOGICAL STUDY ON THE EXPERIMENTAL RABBITS AT AIR-POLLUTED AREA IN YOKKAICHI.
12590 APTIC NO. 29502

INFLUENCE OF PROLONGED CARBON MONOXIDE EXPOSURE AND ALTITUDE HYPOXIA ON SERUM LIPIDS IN MAN.
12558 APTIC NO. 29529

INFLUENCE OF PROLONGED CARBON MONOXIDE EXPOSURE AND HIGH ALTITUDE ON THE COMPOSITION OF BLOOD AND URINE IN MAN.
12559 APTIC NO. 29613

PLASMA VOLUME AND VASCULAR PERMEABILITY DURING HYPOXIA AND CARBON MONOXIDE EXPOSURE.
12582 APTIC NO. 29614

SOME PLANS FOR FUTURE STUDIES FOR LOW LEVEL OF LEAD ON THE HUMAN BEING.
12553 APTIC NO. 29815

THE STUDY OF THE POLLUTED AIR INFLUENCE ON CHILDREN S HEALTH IN RUHRDISTRICT.
12544 APTIC NO. 29899

CEMENTS

MARKET DEVELOPMENT IN GAS ECONOMY.
12010 APTIC NO. 29781

CEMENT DUST AT GREAT BRITAIN.
12001 APTIC NO. 29832

ELECTROSTATIC PRECIPITATORS FOR CEMENT AND LIME INDUSTRY.
12169 APTIC NO. 29735

PROGRESS IN DEDUSTING TECHNIQUE IN CEMENT WORKS.
12125 APTIC NO. 29830

DUST COLLECTING SYSTEMS IN CEMENT WORKS.
12106 APTIC NO. 29831

EXPANSION AND STRENGTHENING OF AIR POLLUTION CONTROL COUNTERMEASURES.
12671 APTIC NO. 29495

CENTRIFUGAL SEPARATORS

THE INFLUENCE OF ENVIRONMENTAL PROTECTION ON PLANNING, OPERATION AND ECONOMY OF STEAM POWER PLANTS. I. MAINTENANCE OF CLEAN AIR.
12036 APTIC NO. 29519

CEMENT DUST AT GREAT BRITAIN.
12001 APTIC NO. 29832

MODERN DUST CONTROL.
12217 APTIC NO. 29486

POLLUTION CONTROL SYSTEMS FOR ASPHALT PLANTS.
12233 APTIC NO. 29492

POLLUTION TECHNOLOGY--WHAT THEY RE DOING OVERSEAS.
12244 APTIC NO. 29650

ENVIRONMENTAL POLLUTION CONTROL MEASURES IN WEST EUROPE AND PROBLEMS OF CARBIDE ELECTRIC FURNACE DUST IN JAPAN.
12073 APTIC NO. 29675

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

TECHNOLOGY RENDERS ITS SERVICES TO AIR PURIFICATION AND NOISE SUPPRESSION AS PART OF ENVIRONMENTAL HYGIENE.
12227 APTIC NO. 29725

PERFORMANCE OF CYCLONE FOR LOW-PRESSURE AIR FLOW.
12182 APTIC NO. 29728

ELECTRIC DUST COLLECTION DEVICE.
12151 APTIC NO. 29819

SELECTION OF FILTRATION EQUIPMENT FOR SULPHUR AND POTASH PROCESSING.
12160 APTIC NO. 29902

COMBUSTION OF WASTES CENTERING AROUND REMOVAL OF NOXIOUS GAS.
12077 APTIC NO. 29985

THE PROBLEM OF INDUSTRIAL DUST: WAYS TO REGULATE ITS COLLECTION.
12099 APTIC NO. 29990

PROCESS FOR REMOVING SULPHUR FROM GASES.
12139 APTIC NO. 30049

ON DOUBLE HEAD-CUT CONES TYPE CENTRIFUGAL DUST COLLECTOR.
12148 APTIC NO. 30070

SULFURIC ACID, SO2 DEVELOPMENTS: REMOVING SO2 AND ACID MIST WITH VENTURI SCRUBBERS.
12209 APTIC NO. 30080

SUMMARY OF H2SO4 MANUFACTURE.
12068 APTIC NO. 30099

AIR POLLUTION DERIVING FROM HEATING PLANTS AND INDUSTRIAL PROCESSES AND ITS CONTROL.
12229 APTIC NO. 30106

GRAVITATIONAL AND DRY CENTRIFUGAL COLLECTORS AND AIR POLLUTION CONTROL.
12095 APTIC NO. 30123

EXPERIMENTAL INVESTIGATION OF THE PROCESS OF CENTRIFUGAL DUST SEPARATION.
12245 APTIC NO. 30133

CERAMICS

A NEW ENVIRONMENTAL POLLUTANT - POLYCHLORINATED BIPHENYLS (PCB).
12044 APTIC NO. 29984

A SIMPLE TECHNIQUE FOR MEASURING MEAN H2S CONCENTRATION.
12275 APTIC NO. 29844

ON DAMAGE TO PLANTS BY FLUORIDES IN EXHAUST GAS FROM TILE MANUFACTURING FACTORY.
12606 APTIC NO. 29597

CESIUM COMPOUNDS

KINETICS OF RECOVERING SULFUR FROM THE SPENT SEED IN AN MHD POWER PLANT.
12118 APTIC NO. 30048

SCAVENGING OF AEROSOL PARTICLES BY SPRAYS.
12437 APTIC NO. 29711

CHARCOAL

ADSORPTIVITY OF DESULFURIZING ACTIVATED CARBON FOR SULFUROUS ACID GAS (II) - EFFECT OF THE ADSORPTION - RINSING PROCESS ON THE ADSORPTIVITY.
12238 APTIC NO. 29788

PERFORMANCE OF CHARCOAL-IMPREGNATED FILTER PAPER TYPE CP-20 FOR COLLECTING AIRBORNE RADIOIODINE.
12185 APTIC NO. 29870

ACTIVATED CARBON INDUSTRY AND PROBLEMS IN FUTURE - SPHERICAL ACTIVATED CARBON FROM COAL.
12235 APTIC NO. 29942

CHEMICAL BONDS

CHEMISTRY OF SINGLET OXYGEN. X. CAROTENOID QUENCHING PARALLELS BIOLOGICAL PROTECTION.
12546 APTIC NO. 29716

DEGRADATION OF POLYMERS IN REACTIVE GASES.
12617 APTIC NO. 29472

CHEMICAL COMPOSITION

THE EXHAUST GAS COMPOSITION AT THE FM GASOLINE ENGINE.
12046 APTIC NO. 29516

QUALITATIVE ANALYSIS OF EXHAUST GAS FROM FISH MEAL PLANT.
12028 APTIC NO. 29662

EMISSION OF AIR POLLUTANTS FROM AIRCRAFT JET ENGINES.
12035 APTIC NO. 29734

SOME PROBLEMS ON THE OFFENSIVE ODOR IN HYOGO PREFECTURE.
12030 APTIC NO. 29842

PRACTICAL ANALYTICAL METHOD OF EXHAUST REFLUX EFFECT ON NOX EMISSION CONTROL.
12102 APTIC NO. 29499

STUDY ON AUTO EXHAUST.
12241 APTIC NO. 29909

COMPARISON OF VARIOUS METHODS OF DETERMINING QUARTZ CONTENT IN NOXIOUS DUST.
12263 APTIC NO. 29546

RESULTS OF COMPARATIVE TESTS ON QUARTZ CONTENT OBTAINED FROM LABORATORIES USING VARIOUS TECHNIQUES OF DETERMINATION.
12327 APTIC NO. 29552

POROUS ANALYTICAL FILTERS AND THEIR USE IN AIR HYGIENE.
12346 APTIC NO. 29784

TENTATIVE METHOD OF ANALYSIS FOR DUSTFALL FROM THE ATMOSPHERE.
12344 APTIC NO. 30119

ANALYSIS OF HC OF LOW GRADE IN ATMOSPHERE.
12391 APTIC NO. 29482

BENZPYRENE AND OTHER AROMATIC HYDROCARBONS IN THE DUST OF POLISH TOWNS.
12385 APTIC NO. 29569

SUSPENDED PARTICULATES IN OSAKA CITY.
12375 APTIC NO. 29853

EFFECTS OF ATMOSPHERIC CONDITIONS ON AUTOMOBILE EXHAUST GAS COMPOSITIONS.
12461 APTIC NO. 29893

METHOD OF CALCULATING EQUILIBRIUM COMPOSITIONS IN INTERACTION OF NITROGEN OXIDES WITH NITRIC ACID SOLUTIONS.
12470 APTIC NO. 29800

THE PRESENT RESULTS OF DETERMINATIONS OF 3,4-BENZPYRENE IN THE AIR OVER BUDAPEST.
12631 APTIC NO. 29590

CHEMICAL METHODS

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

THE MEASUREMENT OF ATMOSPHERIC POLLUTION IN GERMANY.
12340 APTIC NO. 29066

A MEASUREMENT GRID FOR AIR POLLUTION IN THE MOUTH OF THE RIVER RHINE IN ROTTERDAM.
12333 APTIC NO. 29460

METAL COMPONENTS OF FLOATING DUST.
12286 APTIC NO. 29464

LUMINESCT SPECTROMETER ANALYSIS METHOD OF QUANTITATIVE ANALYSIS OF METALS IN DUST FLOATING IN ATMOSPHERE.
12279 APTIC NO. 29466

EXAMINATION OF QUANTITATIVE ANALYSIS METHOD OF FLUORINE IN VEGETABLE SAMPLES.
12302 APTIC NO. 29467

COMPARISON OF VARIOUS METHODS OF DETERMINING QUARTZ CONTENT IN NOXIOUS DUST.
12263 APTIC NO. 29546

RESULTS OF COMPARATIVE TESTS ON QUARTZ CONTENT OBTAINED FROM LABORATORIES USING VARIOUS TECHNIQUES OF DETERMINATION.
12327 APTIC NO. 29552

A GAS ANALYSER FOR THE MEASUREMENT OF IMPURITIES IN AIR.
12277 APTIC NO. 29581

AN AUTOMATIC COULOMETRIC ANALYZER OF OZONE IN THE ATMOSPHERE.
12274 APTIC NO. 29757

METHODS OF DETERMINING SULFUR DIOXIDE (REVIEW).
12305 APTIC NO. 29801

DETERMINATION OF ORGANICALLY BOUND CARBON IN MOIST WASTE GASES.
12345 APTIC NO. 29839

TESTS WITH A SAMPLING AND MEASUREMENT METHOD FOR ROUTINE DETERMINATION OF FLUORINE IN THE LOWER ATMOSPHERE.
12262 APTIC NO. 29887

DETECTION OF THE TOTAL AMOUNT OF ORGANIC SUBSTANCES IN THE DISCHARGED AIR FROM THE PRODUCTION OF SYNTHETIC FATTY ACIDS.
12334 APTIC NO. 29983

STUDIES IN INDOOR SWIMMING POOLS WITH OZONIZATION PLANTS.
12353 APTIC NO. 29999

DETERMINATION AND EVALUATION OF LOW CONCENTRATIONS OF INDUSTRIAL AIR POLLUTANTS.
12309 APTIC NO. 30014

AIR POLLUTION BY SMOKE AND SO2.
12372 APTIC NO. 29289

LEAD CONCENTRATION IN YOKOHAMA AIR.
12399 APTIC NO. 29814

A STUDY OF AIR POLLUTION AROUND A SULPHURIC ACID PLANT.
12374 APTIC NO. 29883

DISTRIBUTION OF LEAD IN THE AIR NEAR CITY ROADS.
12388 APTIC NO. 29918

THE ADSORPTION OF CARBON MONOXIDE ON CU(001) LEED AND AUGER EMISSION STUDIES.
12496 APTIC NO. 29799

THE REACTION KINETICS OF MERCAPTAN WITH OZONE IN THE PPM RANGE.
12497 APTIC NO. 30016

DAMAGE TO PLANTS BY AIR POLLUTANTS.
12603 APTIC NO. 29746

ATMOSPHERIC CORROSION OF THE ELECTROLYTIC NI-CR COATINGS.
12609 APTIC NO. 30039

VALUE ANALYSIS OF COAL.
12629 APTIC NO. 30122

CHEMICAL PROCESSING

NOMOGRAPH GIVES NO OXIDATION.
11993 APTIC NO. 27535

OIL REFINERS PREPARE FOR ANIT-POLLUTION CONTROLS.
12040 APTIC NO. 29127

MERCURY IN THE ENVIRONMENT.
11992 APTIC NO. 29489

COMBUSTION OF WASTE OIL FROM COAL.
12043 APTIC NO. 29534

PROBLEMS OF PUBLIC NUISANCE CAUSED BY BAD ODORS IN HYOGO PREFECTURE.
12029 APTIC NO. 29599

AMMONIA DISPOSAL--COKE PLANTS.
12012 APTIC NO. 29627

A PROGRAM TO SAMPLE AND ANALYZE AIR POLLUTION IN THE VICINITY OF A CHEMICAL RECLAMATION PLANT.
12039 APTIC NO. 29698

MARKET DEVELOPMENT IN GAS ECONOMY.
12010 APTIC NO. 29781

PHYSICAL-CHEMICAL PROBLEMS OF AIR POLLUTION.
11996 APTIC NO. 29786

SOME PROBLEMS ON THE OFFENSIVE ODOR IN HYOGO PREFECTURE.
12030 APTIC NO. 29842

ONE ANSWER TO PLASTICIZER POLLUTION.
11991 APTIC NO. 30028

OXIDATION OF SODIUM SULFIDE AND MERCAPTIDE IN BLACK LIQUOR.
12071 APTIC NO. 29278

GULF RESIDUAL OIL HDS PROCESS.
12136 APTIC NO. 29501

CO BOILER OF FLUIDIZED BED TYPE CATALYTIC CRACKING PROCESS PRODUCIN NO LEAD GASOLINE.
12237 APTIC NO. 29535

MODERN SULFURIC ACID TECHNOLOGY.
12093 APTIC NO. 29607

AIR POLLUTION: CONTROLLED OPERATION OF A NSSC RECOVERY FURNACE.
12127 APTIC NO. 29621

LAW-MAKERS SAY: CLEAN UP OR SHUT DOWN.
12055 APTIC NO. 29628

FEASIBILITY STUDY OF NEW SULFUR OXIDE CONTROL PROCESSES FOR APPLICATION TO SMELTERS AND POWER PLANTS. PART IV: THE WELLMAN-LORD SO2 RECOVERY PROCESS FOR APPLICATION TO POWER PLANT FLUE GASES. (FINAL REPORT).
12208 APTIC NO. 29641

COUNTERMEASURES ON PREVENTION OF INDUSTRIAL POLLUTIONS--PART II ON SULFURIC ACID GAS.
12210 APTIC NO. 29646

POLLUTION REGULATIONS AND THEIR EFFECT ON VEHICLE PREPARATION.
12112 APTIC NO. 29659

ENVIRONMENTAL POLLUTION CONTROL MEASURES IN WEST EUROPE AND PROBLEMS OF CARBIDE ELECTRIC FURNACE DUST IN JAPAN.
12073 APTIC NQ. 29675

PROBLEM OF OBNOXIOUS ODOR IN INDUSTRIAL POLLUTIONS.
12202 APTIC NO. 29745

REMOVAL OF CHLORINE FROM GASES.
12177 APTIC NO. 29802

ACID MIST PRECIPITATOR MADE OF TEFLON FIBER.
12061 APTIC NO. 29833

COMBUSTION PLANT FOR RUBBER-COATED EQUIPMENT, TANKS AND CABLES.
12191 APTIC NO. 29834

ALKALI AND HEAT RECOVERY IN THE FLUE GASES FROM RECOVERY BOILERS.
12193 APTIC NO. 29852

NEW PROCESS OFFERS 99.9% SULPHUR RECOVERY.
12062 APTIC NO. 29855

SELECTION OF FILTRATION EQUIPMENT FOR SULPHUR AND POTASH PROCESSING.
12160 APTIC NO. 29902

METHOD FOR MANUFACTURING SPHERICAL ACTIVE CARBON FROM COAL.
12141 APTIC NO. 29988

ELIMINATION OF OXIDES CONTAINED IN CERTAIN RESIDUAL INDUSTRIAL GASES.
12129 APTIC NO. 30043

PULPERS APPLY ODOR CONTROL.
12104 APTIC NO. 30062

SULFURIC ACID, SO2 DEVELOPMENTS: REMOVING SO2 AND ACID MIST WITH VENTURI SCRUBBERS.
12209 APTIC NO. 30080

THE SCRUBBING OF TAIL GAS FROM SULFURIC ACID PLANTS.
12067 APTIC NO. 30096

SUMMARY OF H2SO4 MANUFACTURE.
12068 APTIC NO. 30099

LOSS OF MERCURY FROM CHLORALKALI PLANTS.
12120 APTIC NO. 30117

TFE-FLUOROCARBON FIBER FILTER BAGS--IT COSTS MORE TO GO FIRST CLASS.
12109 APTIC NO. 30121

REPORT FOR THE INVESTIGATION ON THE METHOD OF SO2 TEST.
12301 APTIC NO. 29381

ANALYZERS FOR MONITORING AIR QUALITY IN POLLUTION.
12272 APTIC NO. 29634

ON MEASUREMENT OF ODOR.
12256 APTIC NO. 29726

AUTOMATED ANALYSIS SYSTEMS MAKES KRAFT EMISSION MEASUREMENTS EASY.
12325 APTIC NO. 29913

DETECTION OF THE TOTAL AMOUNT OF ORGANIC SUBSTANCES IN THE DISCHARGED AIR FROM THE PRODUCTION OF SYNTHETIC FATTY ACIDS.
12334 APTIC NO. 29983

SPECIAL COLUMN CONFIGURATION FOR THE ANALYSIS OF SOME INORGANIC GASES AND LIGHT HYDROCARBONS.
12315 APTIC NO. 30029

A STUDY OF AIR POLLUTION AROUND A SULPHURIC ACID PLANT.
12374 APTIC NO. 29883

ALUMINUM MATERIAL FOR THE CHEMICAL INDUSTRY.
12624 APTIC NO. 29922

THE COSTS FOR MAINTENANCE OF CLEAN AIR. THE INFLUENCE OF SOCIAL COSTS ON THE SELECTION OF AN INDUSTRIAL SITE.
12633 APTIC NO. 29923

POLLUTIONS PREVENTION PLAN FOR CHIBA AND ICHIHARA CITIES IN CHIBA PREFECTURE.
12650 APTIC NO. 29813

CHICAGO

LONG RANGE PLANNING IN AIR RESOURCE MANAGEMENT.
12657 APTIC NO. 30056

CHILDREN

LEAD POLLUTION--A GROWING HAZARD TO PUBLIC HEALTH.
11999 APTIC NO. 29872

AIR POLLUTION.
12363 APTIC NO. 29510

STUDIES ON THE INFLUENCE OF AIR POLLUTION ON THE HEALTH OF THE PEOPLE AT BELOSLAV, DISTRICT OF VARNA, PEOPLE S REPUBLIC OF BULGARIA.
12557 APTIC NO. 29573

ON HYGIENIC AND TOXICOLOGICAL PROBLEMS OF POLLUTION BY ARSENIC.
12534 APTIC NO. 29587

THE INFLUENCE OF AIR POLLUTION ON PUBLIC HEALTH.
12586 APTIC NO. 29589

THE RESEARCH FOR THE EFFECTS OF AIR POLLUTION ON THE HUMAN BODY. (II) THE RELATIONSHIP BETWEEN ASTHMA-LIKE DISEASES OF THE SCHOOL CHILDREN AND AIR POLLUTION IN KITAKYUSHU.
12524 APTIC NO. 29683

EFFECTS OF SOOT AND SMOKE ON THE HEALTH OF SCHOOL CHILDREN.
1255 APTIC NO. 29791

AIR POLLUTION BY TRACE METALS IN JAPAN.
12561 APTIC NO. 29816

THE STUDY OF THE POLLUTED AIR INFLUENCE ON CHILDREN S HEALTH IN RUHRDISTRICT.
12544 APTIC NO. 29899

STUDIES ON AIR POLLUTION AND BRONCHIAL ASTHMA. REPORT I.
12548 APTIC NO. 29925

FEDERALISM MAKES ENVIRONMENTAL PROTECTION DIFFICULT.
12654 APTIC NO. 29969

CHLORATES

DEVELOPMENT OF A METHOD FOR DETERMINING SULPHUR OXIDES IN FLUE GASES.
12265 APTIC NO. 30084

CHLORIDES

PHYSICAL-CHEMICAL PROBLEMS OF AIR POLLUTION.
11996 APTIC NO. 29786

COLLECTION EFFICIENCY OF WATER DROPLETS IN AGCL AEROSOL.
12430 APTIC NO. 29687

BORDEAUX. STUDY OF ATMOSPHERIC POLLUTION IN THE BUILT-UP AREA.
12420 APTIC NO. 30109

METHANESULFENYL CHLORIDE. V. THE SPONTANEOUS DECOMPOSITION OF METHANESULFENYL CHLORIDE AND METHYLSULFUR TRICHLORIDE.
12485 APTIC NO. 29674

RENAL FUNCTION DURING PROLONGED EXPOSURE TO HYPOXIA AND CARBON MONOXIDE. II. ELECTROLYTE HANDLING.
12577 APTIC NO. 29805

COLLECTION OF LEGISLATIONS RELATED WITH MITI CONCERNING POLLUTIONS.
12646 APTIC NO. 29504

CHLORINATED HYDROCARBONS

PESTICIDES IN AIR. VOLATILIZATION OF SOIL-APPLIED DDT AND DDD FROM FLOODED AND NONFLOODED PLOTS.
12047 APTIC NO. 29620

A NEW ENVIRONMENTAL POLLUTANT - POLYCHLORINATED BIPHENYLS (PCB).
12044 APTIC NO. 29984

ON DISPOSAL OF PLASTIC WASTES (PVC) BY FLUID LAYER OF MEDIUM.
12074 APTIC NO. 29449

QUANTITATIVE ANALYSIS OF NO IN ATMOSPHERE - ON CHANGES IN SALTZMAN COEFFICIENT WITH CHANGE IN COMPOSITION OF SALTZMAN REAGENTS.
12308 APTIC NO. 29480

METHANESULFENYL CHLORIDE. V. THE SPONTANEOUS DECOMPOSITION OF METHANESULFENYL CHLORIDE AND METHYLSULFUR TRICHLORIDE.
12485 APTIC NO. 29674

PROGRESS REPORT. JANUARY-DECEMBER 1969.
12555 APTIC NO. 28850

CHLORINE

TECHNOLOGY RENDERS ITS SERVICES TO AIR PURIFICATION AND NOISE SUPPRESSION AS PART OF ENVIRONMENTAL HYGIENE.
12227 APTIC NO. 29725

REMOVAL OF CHLORINE FROM GASES.
12177 APTIC NO. 29802

LOSS OF MERCURY FROM CHLORALKALI PLANTS.

12120 APTIC NO. 30117

A GAS ANALYSER FOR THE MEASUREMENT OF IMPURITIES IN AIR.

12277 APTIC NO. 29581

TRIAL CONSTRUCTION OF NON-DISPERSION TYPE VISIBLE LIGHT GAS ANALYZE AND DETERMINATION OF NITROGEN DIOXIDE, CHLORINE, AND BROMINE.

12303 APTIC NO. 29762

ENVIRONMENTAL POLLUTION AND ITS MEASUREMENTS (II).

12338 APTIC NO. 29843

CHEMICAL PROCESSES AT THE AIR-SEA INTERFACE: THE BEHAVIOR OF FLUORINE.

12468 APTIC NO. 30126

MATERIALS FOR REFERENCE ABOUT ENVIRONMENTAL POLLUTION CONTROL.

12651 APTIC NO. 29818

CHLORINE COMPOUNDS

PHYSICAL-CHEMICAL PROBLEMS OF AIR POLLUTION.

11996 APTIC NO. 29786

DEVELOPMENT OF A METHOD FOR DETERMINING SULPHUR OXIDES IN FLUE GASES.

12265 APTIC NO. 30084

COLLECTION EFFICIENCY OF WATER DROPLETS IN AGCL AEROSOL.

12430 APTIC NO. 29687

BORDEAUX. STUDY OF ATMOSPHERIC POLLUTION IN THE BUILT-UP AREA.

12420 APTIC NO. 30109

METHANESULFENYL CHLORIDE. V. THE SPONTANEOUS DECOMPOSITION OF METHANESULFENYL CHLORIDE AND METHYLSULFUR TRICHLORIDE.

12485 APTIC NO. 29674

STUDIES OF THE SIGNIFICANCE OF DUSTS AND GASES FOR THE PATHOLOGY OF INFECTIONS OF THE RESPIRATORY TRACT.

12529 APTIC NO. 29571

RENAL FUNCTION DURING PROLONGED EXPOSURE TO HYPOXIA AND CARBON MONOXIDE. II. ELECTROLYTE HANDLING.

12577 APTIC NO. 29805

ATMOSPHERIC CORROSION OF SILVER.

12614 APTIC NO. 29951

COLLECTION OF LEGISLATIONS RELATED WITH MITI CONCERNING POLLUTIONS.

12646 APTIC NO. 29504

CHLOROPLASTS

AIR POLLUTION OXIDANTS - THEIR EFFECTS ON METABOLIC PROCESSES IN PLANTS.

12598 APTIC NO. 29524

CHLOROSIS

METABOLIC EFFECTS OF ATMOSPHERIC FLUORIDES ON PLANTS.

12605 APTIC NO. 29616

THE EFFECTS OF AIR POLLUTION ON VEGETATION.

12600 APTIC NO. 30003

CHROMATES

OXIDATION OF NITROGEN MONOXIDE.

12320 APTIC NO. 29676

STUDIES ON LEAD CHROMATE OBTAINED FROM TETRAALKYL LEAD IN LEADED GASOLINE. I. X-RAY DIFFRACTION TESTS OF THE LEAD CHROMATE CRYSTALS.

12296 APTIC NO. 29810

CHROMATOGRAPHY

THE EXHAUST GAS COMPOSITION AT THE FM GASOLINE ENGINE.

12046 APTIC NO. 29516

QUALITATIVE ANALYSIS OF EXHAUST GAS FROM FISH MEAL PLANT.

12028 APTIC NO. 29662

A PROGRAM TO SAMPLE AND ANALYZE AIR POLLUTION IN THE VICINITY OF A CHEMICAL RECLAMATION PLANT.

12039 APTIC NO. 29698

ON COMPOSITION AND LEAD CONTENT OF COMMERCIAL GASOLINE.

12048 APTIC NO. 29936

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.

12085 APTIC NO. 29680

THE MEASUREMENT OF ATMOSPHERIC POLLUTION IN GERMANY.

12340 APTIC NO. 29066

NEW METHODS OF DETERMINING AIR POLLUTION.

12316 APTIC NO. 29595

GC-MS ANALYSIS OF THE SEMI-VOLATILES OF CIGARETTE SMOKE.

12282 APTIC NO. 29660

ON MEASUREMENT OF ODOR.

12256 APTIC NO. 29726

STUDY OF TRACES OF HEAVY ORGANIC PRODUCTS IN FUEL COMBUSTION GASES. (Etude des traces de produits organiques lourds dans les fumees de combustion de fuel). Text in French. Rev. Gen. Thermique (Paris), 10(111):223-238, March 1971. 90 refs.

12310 APTIC NO. 29766

ENVIRONMENTAL POLLUTION AND ITS MEASUREMENTS (II).

12338 APTIC NO. 29843

STUDY OF POLYCYCLIC HYDROCARBONS FIXED ON ATMOSPHERIC DUSTS.

12270 APTIC NO. 29851

DETERMINATION OF AROMATIC HYDROCARBONS EMITTED FROM THE DRY BATTERY PLANT.

12287 APTIC NO. 29862

FLAME PHOTOMETRIC DETECTION OF VOLATILE SULPHUR COMPOUNDS IN SMOKE FROM VARIOUS TYPES OF CIGARETTES.

12283 APTIC NO. 29874

GAS CHROMATOGRAPHIC ANALYSIS OF BENZENE AND TOLUENE IN AUTOMOBILE EXHAUST GAS.

12295 APTIC NO. 29907

AUTOMATED ANALYSIS SYSTEMS MAKES KRAFT EMISSION MEASUREMENTS EASY.

12325 APTIC NO. 29913

GAS CHROMATOGRAPHIC ANALYSIS OF TRACES OF CO AND CO2.

12326 APTIC NO. 29938

DETERMINATION AND EVALUATION OF LOW CONCENTRATIONS OF INDUSTRIAL AIR POLLUTANTS.

12309 APTIC NO. 30014

SPECIAL COLUMN CONFIGURATION FOR THE ANALYSIS OF SOME INORGANIC GASES AND LIGHT HYDROCARBONS.

12315 APTIC NO. 30029

GAS CHROMATOGRAPHY OF REACTIVE SULFUR GASES IN AIR AT THE PARTS- PER-BILLION LEVEL.

12347 APTIC NO. 30065

THE GAS CHROMATOGRAPHIC DETERMINATION OF PESTICIDES. (PART 3) DETERMINATION OF RESIDUES OF ORGANOPHOSPHORUS PESTICIDES.

12349 APTIC NO. 30134

ANALYSIS OF HC OF LOW GRADE IN ATMOSPHERE.

12391 APTIC NO. 29482

THE 3,4-BENZPYRENE CONTENT OF THE AIR IN TWO INDUSTRIAL AREAS.

12400 APTIC NO. 29586

URBAN POLLUTION BY AUTOMOBILE EXHAUST GAS.

12387 APTIC NO. 29744

MEASUREMENT OF ATMOSPHERIC LEVELS OF PESTICIDES.

12392 APTIC NO. 29812

EXPERIMENT ON PHOTOCHEMICAL REACTION OF MOTOR EXHAUST GAS.

12469 APTIC NO. 29500

STUDIES ON PHOTOCHEMICAL REACTION BETWEEN SULFURIC ACID GAS AND ORGANIC COMPOUNDS (2).

12512 APTIC NO. 29463

PHOTOCHEMICAL REACTION BETWEEN SO2 AND ORGANIC COMPOUNDS (II).

12514 APTIC NO. 29967

THE REACTION KINETICS OF MERCAPTAN WITH OZONE IN THE PPM RANGE.

12497 APTIC NO. 30016

PHOTOLYSIS OF THIOLANE VAPOR.

12478 APTIC NO. 30115

EXPERIMENTAL STUDIES ON THE HEALTH EFFECTS OF AUTO EXHAUST GAS IN LOW CONCENTRATIONS. (REPORT 1) PRELIMINARY EXPERIMENT.

12589 APTIC NO. 29921

DAMAGE TO PLANTS BY AIR POLLUTANTS.

12603 APTIC NO. 29746

ABSCISSION. THE PHYTOGERONTOLOGICAL EFFECTS OF ETHYLENE.

12592 APTIC NO. 30060

THE INFLUENCE OF AIR POLLUTION UPON THE DISCOLORATION OF THE DYED STUFF AND THE DECREASE OF TENSILE STRENGTH OF SOME FIBERS.

12612 APTIC NO. 29717

THE PRESENT RESULTS OF DETERMINATIONS OF 3,4-BENZPYRENE IN THE AIR OVER BUDAPEST.

12631 APTIC NO. 29590

CHROMIUM

THE MECHANISM OF ATMOSPHERIC RUSTING AND THE EFFECT OF CU AND P ON THE RUST FORMATION OF LOW ALLOY STEELS.

12615 APTIC NO. 29631

ATMOSPHERIC CORROSION OF THE ELECTROLYTIC NI-CR COATINGS.

12609 APTIC NO. 30039

CHROMIUM COMPOUNDS

DUST COLLECTOR FOR ELECTRIC FURNACE MANUFACTURING FERROALLOY.
12123 APTIC NO. 29481

EXPERIMENTAL INVESTIGATION OF THE PROCESS OF CENTRIFUGAL DUST SEPARATION.
12245 APTIC NO. 30133

OXIDATION OF NITROGEN MONOXIDE.
12320 APTIC NO. 29676

STUDIES ON LEAD CHROMATE OBTAINED FROM TETRAALKYL LEAD IN LEADED GASOLINE. I. X-RAY DIFFRACTION TESTS OF THE LEAD CHROMATE CRYSTALS.
12296 APTIC NO. 29810

DETERMINATION OF IRON, CHROMIUM, COBALT, NICKEL, AND SCANDIUM IN ASBESTOS BY NEUTRON ACTIVATION ANALYSIS.
12292 APTIC NO. 30129

POLLUTIONS AND TOKYO METROPOLITAN GOVERNMENT.
12365 APTIC NO. 29973

EFFECT OF LOW SILICIUM CONTENT AND SOME SURFACE TREATMENT ON THE OXIDATION OF CARBON STEELS IN CARBON DIOXIDE ATMOSPHERES AT MEDIUM TEMPERATURES.
12611 APTIC NO. 29995

CHROMIUM OXIDES

REMOVAL OF CHLORINE FROM GASES.
12177 APTIC NO. 29802

THE EFFECT OF CATALYST POISONS ON THE ACTIVITY OF CARBON MONOXIDE SHIFT CATALYSTS.
12212 APTIC NO. 29944

OXIDATION OF NITROGEN MONOXIDE.
12320 APTIC NO. 29676

CHROMOSOMES

MERCURY IN MAN.
12011 APTIC NO. 29643

CHRONIC

A NEW ENVIRONMENTAL POLLUTANT - POLYCHLORINATED BIPHENYLS (PCB).
12044 APTIC NO. 29984

AIR POLLUTION.
12363 APTIC NO. 29510

RAPID ASSESSMENT OF TESTS OF POLLUTANT EFFECTS IN MAN.
12536 APTIC NO. 29431

PATHOLOGICAL STUDY ON THE EXPERIMENTAL RABBITS AT AIR-POLLUTED AREA IN YOKKAICHI.
12590 APTIC NO. 29502

HISTOPATHOLOGIC FINDINGS IN RATS EXPOSED TO AMBIENT AND FILTERED AIR.
12553 APTIC NO. 29715

SOME RECENT TOPICS IN AIR POLLUTION AND HEALTH IN LONDON.
12562 APTIC NO. 29882

STUDY ON THE EFFECTS OF AIR POLLUTION ON HUMAN BODY--WITH SPECIAL REFERENCE TO OBJECTIVE, COMPARATIVE STUDY OF ALL THE INHABITANTS BY CHEST X-RAY RINDINGS.
12554 APTIC NO. 29904

STUDIES ON PROGNOSIS OF CHRONIC BRONCHITIS.
12587 APTIC NO. 29916

SOME HEALTH SURVEY RESULTS OF UNDERGROUND GARAGE WORKERS.
12568 APTIC NO. 30074

THE ROLE OF AIR POLLUTION ON CHRONIC OBSTRUCTIVE PULMONARY DISEASE.
12539 APTIC NO. 30136

CAN ANYTHING BE DONE FOR EMPHYSEMA? J. Louisiana State Med. Soc., 122(7):216-218, July 1970. 18 refs.
12579 APTIC NO. 30137

STUDIES ON THE SMOKE DAMAGE OF TREES. (I) ON THE ACUTE DAMAGE SYMPTOMS BY THE SO2.
12607 APTIC NO. 29976

CHRYSENES

STUDY OF POLYCYCLIC HYDROCARBONS FIXED ON ATMOSPHERIC DUSTS.
12270 APTIC NO. 29851

CILIA

PATHOLOGICAL STUDY ON THE EXPERIMENTAL RABBITS AT AIR-POLLUTED AREA IN YOKKAICHI.
12590 APTIC NO. 29502

CINCINNATI

GAS CHROMATOGRAPHY OF REACTIVE SULFUR GASES IN AIR AT THE PARTS- PER-BILLION LEVEL.
12347 APTIC NO. 30065

CIRCULATORY SYSTEM

PATHOLOGICAL STUDY ON THE EXPERIMENTAL RABBITS AT AIR-POLLUTED AREA IN YOKKAICHI.
12590 APTIC NO. 29502

PLASMA VOLUME AND VASCULAR PERMEABILITY DURING HYPOXIA AND CARBON MONOXIDE EXPOSURE.
12582 APTIC NO. 29614

RENAL FUNCTION DURING PROLONGED EXPOSURE TO HYPOXIA AND CARBON MONOXIDE. I. GLOMERULAR FILTRATION AND PLASMA FLOW.
12576 APTIC NO. 29615

CAPILLARY FILTRATION RATE ON THE HUMAN CALF DURING EXPOSURE TO CARBON MONOXIDE AND HYPOXIA (3454 M).
12578 APTIC NO. 29804

CIRCULATION, METABOLISM, AND VENTILATION DURING PROLONGED EXPOSURE TO CARBON MONOXIDE AND TO HIGH ALTITUDE.
12560 APTIC NO. 29869

CITIZENS GROUPS

NOBODY BREATHES FRESH AIR. FACTS AND ARGUMENTS ABOUT AIR POLLUTION.
12677 APTIC NO. 29459

CITY GOVERNMENTS

POLLUTIONS AND TOKYO METROPOLITAN GOVERNMENT.
12365 APTIC NO. 29973

ADDENDUM TO ENVIRONMENTAL POLLUTIONS IN KAWASAKI CITY.
12647 APTIC NO. 29511

CHIBA PREFECTURAL ORDINANCE ON POLLUTIONS CONTROL AND ENFORCEMENT REGULATION OF ORDINANCE.
12649 APTIC NO. 29679

MATERIALS FOR REFERENCE ABOUT ENVIRONMENTAL POLLUTION CONTROL.
12651 APTIC NO. 29818

LONG RANGE PLANNING IN AIR RESOURCE MANAGEMENT.
12657 APTIC NO. 30056

CLAY

TFE-FLUOROCARBON FIBER FILTER BAGS--IT COSTS MORE TO GO FIRST CLASS.
12109 APTIC NO. 30121

HETEROGENEOUS CATALYSIS INVOLVING ASTOICHIOMETRIC COMPONENTS. IV. INITIATION EFFECTS OF CARBON MONOXIDE AND OXYGEN OXIDE IN THE HYDROPOLYMERIZATION OF PROPENE AND ISOBUTENE.
12488 APTIC NO. 29871

ON DAMAGE TO PLANTS BY FLUORIDES IN EXHAUST GAS FROM TILE MANUFACTURING FACTORY.
12606 APTIC NO. 29597

CLEAN AIR ACT

HOW THE LAWS AND AGENCIES AFFECT YOU.
12641 APTIC NO. 29113

CLOUDS

LEAD POLLUTION AND PHOTOCHEMICAL SMOG IN TOKYO.
12376 APTIC NO. 29647

THE PREVENTION OF POLLUTION.
12416 APTIC NO. 29623

SCAVENGING IN PERSPECTIVE.
12422 APTIC NO. 29688

INTERACTIONS OF CLOUD CONDENSATION NUCLEI AND ICE NUCLEI WITH CLOUD AND PRECIPITATION ELEMENTS: A REVIEW.
12443 APTIC NO. 29692

INTERNATIONAL CONFERENCE ON CONDENSATION NUCLEI AND ICE-FORMING NUCLEI.
12454 APTIC NO. 29699

CONTINUOUS CHARGED CLOUD-PARTICLE SAMPLER.
12451 APTIC NO. 29712

THERMAL-DIFFUSION CHAMBERS AS CLOUD-NUCLEI COUNTERS.
12452 APTIC NO. 29714

CARBON MONOXIDE IN RAINWATER.
12460 APTIC NO. 29880

RADIANCE AND POLARIZATION OF LIGHT REFLECTED FROM OPTICALLY THICK CLOUDS.
12429 APTIC NO. 29915

SOME RESULTS OF LIDAR PROBING OF THE TROPOSHERE.
12434 APTIC NO. 30105

NEW TREND IN POLLUTIONS COUNTERMEASURES IN THE 70 S.
12660 APTIC NO. 29507

COAL

NITROGEN OXIDES ANALYSIS.
12042 APTIC NO. 29538

MERCURY IN MAN.
12011 APTIC NO. 29643

PHYSICAL-CHEMICAL PROBLEMS OF AIR POLLUTION.
11996 APTIC NO. 29786

FOSSIL FUELS AS A SOURCE OF MERCURY POLLUTION.
12019 APTIC NO. 30017

PROCESS FOR THE SEPARATION OF SULFUR FROM GAS.
12052 APTIC NO. 29273

VENTILATION AND EXPLOSION EXPERIMENTS IN A WATER-TUBE BOILER OF A POWER PLANT.
12091 APTIC NO. 29514

OBSERVATIONS ON THE ELIMINATION OF DUST.
12143 APTIC NO. 29554

PREVENTION OF AIR POLLUTION ON IRON FOUNDRY.
12178 APTIC NO. 29602

ENVIRONMENTAL POLLUTION CONTROL MEASURES IN WEST EUROPE AND PROBLEMS OF CARBIDE ELECTRIC FURNACE DUST IN JAPAN.
12073 APTIC NO. 29675

DEVELOPMENT OF A NEW DUST COLLECTOR.
12036 APTIC NO. 29686

ELECTRIC DUST COLLECTION DEVICE.
12151 APTIC NO. 29819

ACTIVATED CARBON INDUSTRY AND PROBLEMS IN FUTURE - SPHERICAL ACTIVATED CARBON FROM COAL.
12235 APTIC NO. 29942

DESULFURIZATION OF WASTE GASES AND FUELS.
12205 APTIC NO. 29957

METHOD FOR MANUFACTURING SPHERICAL ACTIVE CARBON FROM COAL.
12141 APTIC NO. 29988

JOINT DEMONSTRATION OF METHODS FOR EXTINGUISHMENT AND CONTROL OF BURNING COAL REFUSE PILES. (FINAL REPORT).
12066 APTIC NO. 30057

EXPERIMENTAL INVESTIGATION OF THE PROCESS OF CENTRIFUGAL DUST SEPARATION.
12245 APTIC NO. 30133

EMISSION MONITORING WITH ACKNOWLEDGED MEASURING UNITS AND ANALYZERS.
12260 APTIC NO. 29955

QUANTITATIVE ALDEHYDE DETERMINATION IN THE AIR OF WORKING PLACES.
12317 APTIC NO. 30023

A MATHEMATICAL MODEL FOR MEASURING MASS/NUMBER INDEX OF RESPIRABLE AIRBORNE COAL DUST.
12258 APTIC NO. 30081

MERCURY IN THE AIR.
12362 APTIC NO. 29490

THE 3,4-BENZPYRENE CONTENT OF THE AIR IN TWO INDUSTRIAL AREAS.
12400 APTIC NO. 29586

A REPORT OF THE PERIODIC MEASUREMENT OF SOOT AND DUST, AND SULFUR OXIDES IN THE AIR AROUND THE HOSPITAL.
12381 APTIC NO. 29794

THE TENDENCY OF AIR POLLUTION AT NAGOYA CITY OBSERVED FROM THE WEIGHT OF FALLING DUST.
12396 APTIC NO. 30076

ON HYGIENIC AND TOXICOLOGICAL PROBLEMS OF POLLUTION BY ARSENIC.
12534 APTIC NO. 29587

CANCER MORTALITY IN RELATION TO NATIONAL CONSUMPTION OF CIGARETTES, SOLID FUEL, TEA AND COFFEE.
12585 APTIC NO. 29608

SULFUR RECOVERY IN THE MANUFACTURE OF PIPELINE GAS FROM COAL.
12635 APTIC NO. 29143

VALUE ANALYSIS OF COAL.
12629 APTIC NO. 30122

COMPARATIVE STUDY OF PERMISSIBLE LIMITS OF AIR DUSTINESS IN VARIOUS COUNTRIES.
12639 APTIC NO. 29543

INDUSTRIAL REACTION TO SULPHUR DIOXIDE CONTROL EQUIPMENT AND STANDARDS.
12637 APTIC NO. 29604

LONG RANGE PLANNING IN AIR RESOURCE MANAGEMENT.
12657 APTIC NO. 30056

COAL CHARACTERISTICS

MERCURY IN MAN.
12011 APTIC NO. 29643

ON HYGIENIC AND TOXICOLOGICAL PROBLEMS OF POLLUTION BY ARSENIC.
12534 APTIC NO. 29587

VALUE ANALYSIS OF COAL.
12629 APTIC NO. 30122

INDUSTRIAL REACTION TO SULPHUR DIOXIDE CONTROL EQUIPMENT AND STANDARDS.
12637 APTIC NO. 29604

COAL PREPARATION

REDUCING SO2 EMISSION FROM STATIONARY SOURCES.
12098 APTIC NO. 30102

SULFUR RECOVERY IN THE MANUFACTURE OF PIPELINE GAS FROM COAL.
12635 APTIC NO. 29143

COAL TARS

COMBUSTION OF WASTE OIL FROM COAL.
12043 APTIC NO. 29534

BORDEAUX. STUDY OF ATMOSPHERIC POLLUTION IN THE BUILT-UP AREA.
12420 APTIC NO. 30109

COBALT COMPOUNDS

ASPHALTENE HYDRODESULFURIZATION WITH SMALL CATALYST PARTICLES DISPOSED IN A GUARD CHAMBER-MAIN REACTOR SYSTEM.
12121 APTIC NO. 29719

CONTACT HYDRODESULFURIZATION OF PETROLEUM RESIDUAL OIL.
12200 APTIC NO. 29932

METHOD TO MANUFACTURE CATALYST FOR DESULFURIZATION BY HYDROGEN ADDITION OF LIQUID HYDROCARBON.
12234 APTIC NO. 29974

CATALYST FOR HEAVY OIL DESULFURIZATION.
12224 APTIC NO. 29977

STUDY ON THE DIRECT DESULFURIZATION OF HEAVY OIL.
12159 APTIC NO. 29989

PARALLEL DETERMINATION OF NICKEL AND COBALT IN URINE AND ATMOSPHERE.
12300 APTIC NO. 29953

DETERMINATION OF IRON, CHROMIUM, COBALT, NICKEL, AND SCANDIUM IN ASBESTOS BY NEUTRON ACTIVATION ANALYSIS.
12292 APTIC NO. 30129

TRACE ELEMENTS IN ATMOSPHERIC PRECIPITATION AROUND THE OTKAZNOE RESERVOIR.
12432 APTIC NO. 29910

HETEROGENEOUS CATALYSIS INVOLVING ASTOICHIOMETRIC COMPONENTS. IV. INITIATION EFFECTS OF CARBON MONOXIDE AND OXYGEN OXIDE IN THE HYDROPOLYMERIZATION OF PROPENE AND ISOBUTENE.
12488 APTIC NO. 29871

COKE

AMMONIA DISPOSAL--COKE PLANTS.
12012 APTIC NO. 29627

MARKET DEVELOPMENT IN GAS ECONOMY.
12010 APTIC NO. 29781

CAUSES, MEASUREMENT AND LIMITATION OF PARTICULATE EMISSION FROM OIL-FIRED STEAM BOILERS.
12000 APTIC NO. 30021

HEAT EXTRACTION AIDS DEPOLLUTION OF GASES AND WATER IN CHEVROLET FOUNDRY.
12097 APTIC NO. 29523

LAW-MAKERS SAY: CLEAN UP OR SHUT DOWN.
12055 APTIC NO. 29628

ATMOSPHERIC POLLUTION AT MODERN COKE WORKS.
12380 APTIC NO. 29257

COLLECTORS

THE INFLUENCE OF ENVIRONMENTAL PROTECTION ON PLANNING, OPERATION AND ECONOMY OF STEAM POWER PLANTS. I. MAINTENANCE OF CLEAN AIR.
12036 APTIC NO. 29519

CEMENT DUST AT GREAT BRITAIN.
12001 APTIC NO. 29832

TREATMENT OF MUNICIPAL TRASH BY SANITATION TRUCK.
12049 APTIC NO. 29979

MODERN DUST CONTROL.
12217 APTIC NO. 29486

POLLUTION CONTROL SYSTEMS FOR ASPHALT PLANTS.
12233 APTIC NO. 29492

EXHAUST GAS CLEANER FOR DIESEL ENGINES.
12221 APTIC NO. 29533

MITSUBISHI-RESEARCH WEDGE SCRUBBER.
12081 APTIC NO. 29537

A NEW FILTER FOR SUSPENDED MATTER WITH HIGH COLLECTION EFFICIENCY AND LOW FLOW RESISTANCE.
12231 APTIC NO. 29578

POLLUTION TECHNOLOGY--WHAT THEY RE DOING OVERSEAS.
12244 APTIC NO. 29650

ENVIRONMENTAL POLLUTION CONTROL MEASURES IN WEST EUROPE

AND PROBLEMS OF CARBIDE ELECTRIC FURNACE DUST IN JAPAN.
12073 APTIC NO. 29675

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

DEVELOPMENT OF A NEW DUST COLLECTOR.
12056 APTIC NO. 29686

TECHNOLOGY RENDERS ITS SERVICES TO AIR PURIFICATION AND NOISE SUPPRESSION AS PART OF ENVIRONMENTAL HYGIENE.
12227 APTIC NO. 29725

PERFORMANCE OF CYCLONE FOR LOW-PRESSURE AIR FLOW.
12182 APTIC NO. 29728

STEAM-SMOKE MIST CONTACT DEVICE.
12174 APTIC NO. 29792

ELECTRIC DUST COLLECTION DEVICE.
12151 APTIC NO. 29819

PROGRESS IN DEDUSTING TECHNIQUE IN CEMENT WORKS.
12125 APTIC NO. 29830

DUST COLLECTING SYSTEMS IN CEMENT WORKS.
12106 APTIC NO. 29831

AIR POLLUTION TEST METHODS COMPARED IN INCINERATOR EVALUATION PROGRAM.
12119 APTIC NO. 29837

PRINCIPLES OF COLLECTING PARTICULATES: DRY, WET OR ELECTROSTATICALLY.
12232 APTIC NO. 29838

THE NEW DUPLEX IRON MELTING PLANT AT THE M. BUSCH KG IN WEHRSTAPEL.
12094 APTIC NO. 29861

PERFORMANCE OF CHARCOAL-IMPREGNATED FILTER PAPER TYPE CP-20 FOR COLLECTING AIRBORNE RADIOIODINE.
12185 APTIC NO. 29870

SELECTION OF FILTRATION EQUIPMENT FOR SULPHUR AND POTASH PROCESSING.
12160 APTIC NO. 29902

MUFFLER FOR REMOVING PARTICULATE LEAD FROM EXHAUST GASES OF INTERNAL COMBUSTION ENGINES.
12168 APTIC NO. 29920

DESULFURIZATION OF EXHAUST GAS.
12078 APTIC NO. 29927

METHOD TO ARREST AND REMOVE WHITE SMOKE PRODUCED FROM MOLTEN ZINC PLATING PROCESS.
12135 APTIC NO. 29940

REMOVAL OF BROWN FUME FROM WASTE GASES OF OPEN HEARTH FURNACE OXYGEN STEELMAKING PROCESS.
12194 APTIC NO. 29945

COMBUSTION OF WASTES CENTERING AROUND REMOVAL OF NOXIOUS GAS.
12077 APTIC NO. 29985

THE PROBLEM OF INDUSTRIAL DUST: WAYS TO REGULATE ITS COLLECTION.
12099 APTIC NO. 29990

FACTORS TO CONSIDER IN SELECTING AIR POLLUTION CONTROL EQUIPMENT.
12195 APTIC NO. 29996

PROCESS FOR REMOVING SULPHUR FROM GASES.
12139 APTIC NO. 30049

ON DOUBLE HEAD-CUT CONES TYPE CENTRIFUGAL DUST COLLECTOR.
12148 APTIC NO. 30070

SULFURIC ACID, SO2 DEVELOPMENTS: REMOVING SO2 AND ACID MIST WITH VENTURI SCRUBBERS.
12209 APTIC NO. 30080

ON A DUST-COLLECTING DEVICE FOR A FERROSILICON FURNACE.
12219 APTIC NO. 30086

SUMMARY OF H2SO4 MANUFACTURE.
12068 APTIC NO. 30099

AIR POLLUTION DERIVING FROM HEATING PLANTS AND INDUSTRIAL PROCESSES AND ITS CONTROL.
12229 APTIC NO. 30106

GRAVITATIONAL AND DRY CENTRIFUGAL COLLECTORS AND AIR POLLUTION CONTROL.
12095 APTIC NO. 30123

EXPERIMENTAL INVESTIGATION OF THE PROCESS OF CENTRIFUGAL DUST SEPARATION.
12245 APTIC NO. 30133

DETERMINATION OF AROMATIC HYDROCARBONS EMITTED FROM THE DRY BATTERY PLANT.
12287 APTIC NO. 29862

THE COSTS FOR MAINTENANCE OF CLEAN AIR. THE INFLUENCE OF SOCIAL COSTS ON THE SELECTION OF AN INDUSTRIAL SITE.
12633 APTIC NO. 29923

ON OUTLINE OF MACHINERY CREDIT INSURANCE AND ITS APPLICATION TO DUST COLLECTION EQUIPMENT.
12634 APTIC NO. 30087

PRESENT SITUATION OF ADMINISTRATION CONCERNING POLLUTIONS.
12648 APTIC NO. 29598

POLLUTIONS PREVENTION PLAN FOR CHIBA AND ICHIHARA CITIES IN CHIBA PREFECTURE.
12650 APTIC NO. 29813

NOBODY BREATHES FRESH AIR. FACTS AND ARGUMENTS ABOUT AIR POLLUTION.
12677 APTIC NO. 29459

COLLOIDS

CONTACT HYDRODESULFURIZATION OF PETROLEUM RESIDUAL OIL.
12200 APTIC NO. 29932

COLORIMETRY

ATMOSPHERIC POLLUTION IN HEADINGS FOLLOWING SHOTFIRING.
12024 APTIC NO. 29678

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

INVESTIGATION ON THE MEASURING ERRORS OF CONDUCTOMETRIC SULFUR DIOXIDE ANALYZER USED FOR AIR POLLUTION MONITOR.
12356 APTIC NO. 29398

EXAMINATION OF QUANTITATIVE ANALYSIS METHOD OF FLUORINE IN VEGETABLE SAMPLES.
12302 APTIC NO. 29467

QUANTITATIVE ANALYSIS OF NO IN ATMOSPHERE - ON CHANGES IN SALTZMAN COEFFICIENT WITH CHANGE IN COMPOSITION OF SALTZMAN REAGENTS.
12308 APTIC NO. 29480

OXIDATION OF NITROGEN MONOXIDE.
12320 APTIC NO. 29676

JIS ANALYTICAL PROCESS FOR NITROGEN OXIDES IN WASTE GAS.
12355 APTIC NO. 29677

PROGRESS IN MEASUREMENT OF AIR POLLUTION.
12350 APTIC NO. 29748

STUDY OF TRACES OF HEAVY ORGANIC PRODUCTS IN FUEL COMBUSTION GASES. (Etude des traces de produits organiques lourds dans les fumees de combustion de fuel). Text in French. Rev. Gen. Thermique (Paris), 10(111):223-238, March 1971. 90 refs.
12310 APTIC NO. 29766

METHODS OF DETERMINING SULFUR DIOXIDE (REVIEW).
12305 APTIC NO. 29801

DETERMINATION OF RUTIN AEROSOL IN THE AIR.
12329 APTIC NO. 29806

ANALYSIS OF MONOETHANOLAMIN IN THE AIR.
12339 APTIC NO. 29970

DETERMINATION AND EVALUATION OF LOW CONCENTRATIONS OF INDUSTRIAL AIR POLLUTANTS.
12309 APTIC NO. 30014

A COMPREHENSIVE SAMPLING SYSTEM FOR STUDYING THE RELATION BETWEEN VISIBILITY, METEOROLOGICAL PARAMETERS AND ATMOSPHERIC POLLUTION.
12276 APTIC NO. 30082

DEVELOPMENT OF A METHOD FOR DETERMINING SULPHUR OXIDES IN FLUE GASES.
12265 APTIC NO. 30084

COLLECTION EFFICIENCY OF WATER DROPLETS IN AGCL AEROSOL.
12430 APTIC NO. 29687

STUDIES ON PHOTOLYSIS OF NITORGEN OXIDE.
12513 APTIC NO. 29527

COLUMN CHROMATOGRAPHY

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

STUDY OF TRACES OF HEAVY ORGANIC PRODUCTS IN FUEL COMBUSTION GASES. (Etude des traces de produits organiques lourds dans les fumees de combustion de fuel). Text in French. Rev. Gen. Thermique (Paris), 10(111):223-238, March 1971. 90 refs.
12310 APTIC NO. 29766

AUTOMATED ANALYSIS SYSTEMS MAKES KRAFT EMISSION MEASUREMENTS EASY.
12325 APTIC NO. 29913

SPECIAL COLUMN CONFIGURATION FOR THE ANALYSIS OF SOME INORGANIC GASES AND LIGHT HYDROCARBONS.
12315 APTIC NO. 30029

COMBUSTION

THE INDUSTRIAL FIRING SYSTEMS OF THE 1970'S.
12025 APTIC NO. 28968

AIR POLLUTANTS GENERATED IN INTRA-FURNACE COMBUSTION.
12020 APTIC NO. 29532

AMMONIA DISPOSAL--COKE PLANTS.
12012 APTIC NO. 29627

EMISSION OF AIR POLLUTANTS FROM AIRCRAFT JET ENGINES.
12035 APTIC NO. 29734

SELF-IGNITION OF GASEOUS FUELS THROUGH THE HEATING EFFECT OF A WAST GAS STREAM.
11998 APTIC NO. 29739

STUDY OF THE COMBUSTION OF PARTLY PRE-MIXED LAMINAR NATURAL GAS FLAMES.
12021 APTIC NO. 29948

JET AIRCRAFT AIR POLLUTANT PRODUCTION AND DISPERSION.
12016 APTIC NO. 30130

ON DISPOSAL OF PLASTIC WASTES (PVC) BY FLUID LAYER OF MEDIUM.
12074 APTIC NO. 29449

CARBON MONOXIDE AS A COMBUSTION CONTROL PARAMETER.
12072 APTIC NO. 29471

EXPERIMENTS CONCERNING STOICHIOMETRIC COMBUSTION IN OIL-FIRED FURNACES OF FRENCH POWER PLANTS.
12090 APTIC NO. 29513

ODOR TREATMENT AND ITS COST AT RENDERING FACTORIES.
12211 APTIC NO. 29601

PROBLEM OF OBNOXIOUS ODOR IN INDUSTRIAL POLLUTIONS.
12202 APTIC NO. 29745

CALCULATION OF EXCESS AIR FOR COMBUSTION PRCCESSES USING O2-TO-N2 RATIO.
12176 APTIC NO. 29796

STUDY ON AUTO EXHAUST.
12241 APTIC NO. 29909

COMBUSTION OF WASTES CENTERING AROUND REMOVAL OF NOXIOUS GAS.
12077 APTIC NO. 29985

LAB TESTS SHOW ELECTRIC FIELD MIGHT HELP REDUCE ENGINE KNOCK.
12088 APTIC NO. 30036

EXHAUST GAS EVALUATION BY AIR RATIO COEFFICIENTS.
12278 APTIC NO. 29638

STUDY OF TRACES OF HEAVY ORGANIC PRODUCTS IN FUEL COMBUSTION GASES. (Etude des traces de produits organiques lourds dans les fumees de combustion de fuel). Text in French. Rev. Gen. Thermique (Paris), 10(111):223-238, March 1971. 90 refs.
12310 APTIC NO. 29766

DETECTION OF THE TOTAL AMOUNT OF ORGANIC SUBSTANCES IN THE DISCHARGED AIR FROM THE PRODUCTION OF SYNTHETIC FATTY ACIDS.
12334 APTIC NO. 29983

NO-X CONTROL FROM STATIONARY SOURCES.
12427 APTIC NO. 29764

INVESTIGATION OF NITRIC OXIDE FORMATION KINETICS IN COMBUSTION PROCESSES: THE HYDROGEN-OXYGEN-NITROGEN REACTION.
12477 APTIC NO. 29610

THERMAL AND DIFFUSIONAL EFFECTS IN NONCATALYTIC SOLID GAS REACTIONS.
12522 APTIC NO. 29612

PROGRESS REVIEW NO. 62: COMBUSTION OF SINGLE DROPLETS AND SIMPLIFIED SPRAY SYSTEMS.
12493 APTIC NO. 29803

COMBUSTION AIR

COMBUSTION REGULARITY A KEY TO SPARK-IGNITION ENGINE EMISSIONS REDUCTION? Preprint, Academia R. P. R., Bucharest, 15p., 1970. 4 refs. (Presented at the Internal Combustion Engines Conference, 2nd International, Bucharest (Rumania), 1970.)
12023 APTIC NO. 27641

PROBLEMS OF AERATION OF THE CRANKCASE OF RECIPROCATING ENGINES WITH AN OTTO WORK CYCLE.
12009 APTIC NO. 29721

EMISSION OF AIR POLLUTANTS FROM AIRCRAFT JET ENGINES.
12035 APTIC NO. 29734

SELF-IGNITION OF GASEOUS FUELS THROUGH THE HEATING EFFECT OF A WAST GAS STREAM.
11998 APTIC NO. 29739

EXPERIMENTAL STUDY ON PLASTICS INCINERATION.
12017 APTIC NO. 29841

STUDY OF THE COMBUSTION OF PARTLY PRE-MIXED LAMINAR NATURAL GAS FLAMES.
12021 APTIC NO. 29948

TAKING ANOTHER LOOK BEFORE WE TAKE THE LEAD OUT.
11997 APTIC NO. 30067

THE SE-DUCT--AN IDEAL SOLUTION FOR GAS HEATERS.
12002 APTIC NO. 30132

MEASUREMENT DATA OBTAINED FROM EXPERIMENTS WITH THE DYNAVANE HIGH CAPACITY DRY TYPE DUST SEPARATOR.
12108 APTIC NO. 28791

CARBON MONOXIDE AS A COMBUSTION CONTROL PARAMETER.
12072 APTIC NO. 29471

EXPERIMENTS CONCERNING STOICHIOMETRIC COMBUSTION IN OIL-FIRED FURNACES OF FRENCH POWER PLANTS.
12090 APTIC NO. 29513

VENTILATION AND EXPLOSION EXPERIMENTS IN A WATER-TUBE BOILER OF A POWER PLANT.
12091 APTIC NO. 29514

AIR POLLUTION: CONTROLLED OPERATION OF A NSSC RECOVERY FURNACE.
12127 APTIC NO. 29621

EMISSION CONTROL BY EXHAUST MANIFOLD REACTOR--AN INITIAL STUDY FOR SMALL ENGINES.
12163 APTIC NO. 29629

EXHAUST SYSTEM.
12165 APTIC NO. 29723

DEVELOPMENT OF GAS PURIFICATION INSTALLATIONS FOR ELECTRIC MELTING FURNACES.
12204 APTIC NO. 29740

GASIFICATION OF HYDROCARBONS.
12137 APTIC NO. 29779

CALCULATION OF EXCESS AIR FOR COMBUSTION PROCESSES USING O2-TO-N2 RATIO.
12176 APTIC NO. 29796

MODERN OIL BURNING TECHNOLOGY AS DISPLAYED ON THE INTHERM IN STUTTGART AND THE 6.ISH IN FRANKFURT 1971.
12187 APTIC NO. 29824

AIR POLLUTION TEST METHODS COMPARED IN INCINERATOR EVALUATION PROGRAM.
12119 APTIC NO. 29837

EXPERIMENTAL RESEARCH ON LOW EXCESS AIR COMBUSTION IN BOILER BURNING HEAVY OIL ONLY.
12142 APTIC NO. 29860

ATTEMPT AT A THERMODYNAMIC SOLUTION: AUTOMOBILE EXHAUST GASES.
12147 APTIC NO. 29906

HIGH-CONCENTRATION SULFUR DIOXIDE FROM CALCINING PYRITES IN THE DKSM FURNACE.
12157 APTIC NO. 29982

COMBUSTION OF WASTES CENTERING AROUND REMOVAL OF NOXIOUS GAS.
12077 APTIC NO. 29985

CONTROL OF POLLUTANT EMISSION AND SULPHURIC ACID CORROSION FROM COMBUSTION OF RESIDUAL FUEL OIL. PART I: LOW-PRESSURE HEATING BOILERS WITH MECHANICAL ATOMIZING BURNERS.
12164 APTIC NO. 30055

LOW POWER HOUSEHOLD OIL BURNING INSTALLATIONS. HOW THEY FUNCTION, PROPOSAL FOR A METHOD OF REGULATING THEM.
12079 APTIC NO. 30108

NO-X CONTROL FROM STATIONARY SOURCES.
12427 APTIC NO. 29764

COMBUSTION PRODUCTS

THE INDUSTRIAL FIRING SYSTEMS OF THE 1970'S.
12025 APTIC NO. 28968

THE INFLUENCE OF ENVIRONMENTAL PROTECTION ON PLANNING, OPERATION AND ECONOMY OF STEAM POWER PLANTS. I. MAINTENANCE OF CLEAN AIR.
12036 APTIC NO. 29519

AIR POLLUTANTS GENERATED IN INTRA-FURNACE COMBUSTION.
12020 APTIC NO. 29532

NITROGEN OXIDES ANALYSIS.
12042 APTIC NO. 29538

HEAVY METAL POLLUTION IN THE ONAHAMA INDUSTRIAL AREA. 1ST REPORT. DISTRIBUTION OF HEAVY METALS IN SOIL.
12006 APTIC NO. 29539

CONSIDERATIONS IN THE CONSTRUCTION OF LARGE REFUSE INCINERATORS.
12026 APTIC NO. 29547

AMMONIA DISPOSAL--COKE PLANTS.
12012 APTIC NO. 29627

QUALITATIVE ANALYSIS OF EXHAUST GAS FROM FISH MEAL PLANT.
12028 APTIC NO. 29662

INCINERATOR DESIGNED TO ANTICIPATE PROBLEMS.
11994 APTIC NO. 29669

SELF-IGNITION OF GASEOUS FUELS THROUGH THE HEATING EFFECT OF A WAST GAS STREAM.
11998 APTIC NO. 29739

INVESTIGATION OF HEAVY METAL POLLUTION IN IWAKI CITY.
12007 APTIC NO. 29787

THE REMOTE HEATING PLANT IN RECKLINGHAUSEN--A CONTRIBUTION TO THE PROTECTION OF THE ENVIRONMENT.
11990 APTIC NO. 29914

TREATMENT OF MUNICIPAL TRASH BY SANITATION TRUCK.
12049 APTIC NO. 29979

FOSSIL FUELS AS A SOURCE OF MERCURY POLLUTION.
12019 APTIC NO. 30017

CAUSES, MEASUREMENT AND LIMITATION OF PARTICULATE EMISSION FROM OIL-FIRED STEAM BOILERS.
12000 APTIC NO. 30021

DECONTAMINATION OF POLLUTED AIR FROM HARD PITCH PRODUCTION PLANT.
12022 APTIC NO. 30026

ONE ANSWER TO PLASTICIZER POLLUTION.
11991 APTIC NO. 30028

OPERATING EXPERIENCE OF EVAPORATIVE COOLERS SERVING CUPOLAS AIR POLLUTION CONTROL SYSTEMS.
12034 APTIC NO. 30032

THE EMISSION AND IMMISSION CONDITIONS OF THE POWER PLANTS IN THE BOEHLENER AREA.
12045 APTIC NO. 30072

JET AIRCRAFT AIR POLLUTANT PRODUCTION AND DISPERSION.
12016 APTIC NO. 30130

MEASUREMENT DATA OBTAINED FROM EXPERIMENTS WITH THE DYNAVANE HIGH CAPACITY DRY TYPE DUST SEPARATOR.
12108 APTIC NO. 28791

BASIC RESEARCH ON SMOKE DESULFURIZATION BY LIME-METALS, 2ND REPORT - EFFECT OF METAL ADDITION ON CALCINATION OF LIME.
12153 APTIC NO. 29080

PROCESS FOR THE SEPARATION OF SULFUR FROM GAS.
12052 APTIC NO. 29273

CARBON MONOXIDE AS A COMBUSTION CONTROL PARAMETER.
12072 APTIC NO. 29471

BASIC RESEARCH ON SMOKE DESULFURIZATION BY LIME-METALS, 1ST REPORT - DESULFURIZATION EFFECT BY ADDITION OF METAL.
12154 APTIC NO. 29478

STUDY ON MECHANISM OF REACTION WITH SULFUR DIOXIDE OF LIMESTONE POWDER BLOWN INTO COMBUSTION GAS.
12146 APTIC NO. 29479

ON CONDITIONS FOR PROPER USE OF ACTIVATED CARBON AS AN AIR PURIFICATION AGENT (2) - ITS EFFICIENCY FOR REMOVAL OF SO2 GAS.
12113 APTIC NO. 29496

ADSORPTION OF SULFUR DIOXIDE GAS BY ACTIVATED CARBON OR MOLECULAR SIEVE.
12201 APTIC NO. 29497

EXPERIMENTS CONCERNING STOICHIOMETRIC COMBUSTION IN OIL-FIRED FURNACES OF FRENCH POWER PLANTS.
12090 APTIC NO. 29513

VENTILATION AND EXPLOSION EXPERIMENTS IN A WATER-TUBE BOILER OF A POWER PLANT.
12091 APTIC NO. 29514

HEAT EXTRACTION AIDS DEPOLLUTION OF GASES AND WATER IN CHEVROLET FOUNDRY.
12097 APTIC NO. 29523

EXHAUST GAS CLEANER FOR DIESEL ENGINES.
12221 APTIC NO. 29533

CO BOILER OF FLUIDIZED BED TYPE CATALYTIC CRACKING PROCESS PRODUCIN NO LEAD GASOLINE.
12237 APTIC NO. 29535

THE NEW PLANT FOR PRODUCTION OF SULFUR DIOXIDE AT LEVERKUSEN.
12203 APTIC NO. 29577

OUTLOOK OF ENVIRONMENTAL POLLUTION AND ITS PREVENTION TECHNOLOGY.
12124 APTIC NO. 29600

PREVENTION OF AIR POLLUTION ON IRON FOUNDRY.
12178 APTIC NO. 29602

AIR POLLUTION: CONTROLLED OPERATION OF A NSSC RECOVERY FURNACE.
12127 APTIC NO. 29621

SMELTER POLLUTION CONTROL--FACTS AND PROBLEMS.
12076 APTIC NO. 29622

PULSED EMISSION CHIMNEY.
12082 APTIC NO. 29626

LAW-MAKERS SAY: CLEAN UP OR SHUT DOWN.
12055 APTIC NO. 29628

FEASIBILITY STUDY OF NEW SULFUR OXIDE CONTROL PROCESSES FOR APPLICATION TO SMELTERS AND POWER PLANTS. PART IV: THE WELLMAN-LORD SO2 RECOVERY PROCESS FOR APPLICATION TO POWER PLANT FLUE GASES. (FINAL REPORT).
12208 APTIC NO. 29641

COUNTERMEASURES ON PREVENTION OF INDUSTRIAL POLLUTIONS--PART II ON SULFURIC ACID GAS.
12210 APTIC NO. 29646

METHOD TO REMOVE HARMFUL SUBSTANCES FROM STACK GAS BY-PRODUCING AMMONIUM SULFATE AND OTHERS (XV) - ACTIVATION ENERGY OF ACTIVATED CARBON FOR SO2 ADSORPTION.
12161 APTIC NO. 29648

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

DEVICE TO HOLD IN PLACE ATOMIZER NOZZLES OF A WASHER DEVICE FOR SULFUR OXIDE GAS CONTAINED IN COMBUSTION EXHAUST GAS FROM BOILER.
12138 APTIC NO. 29685

DEVELOPMENT OF A NEW DUST COLLECTOR.
12056 APTIC NO. 29686

SULFUR DIOXIDE REMOVAL FROM STACK GASES.
12215 APTIC NO. 29720

TECHNOLOGY RENDERS ITS SERVICES TO AIR PURIFICATION AND NOISE SUPPRESSION AS PART OF ENVIRONMENTAL HYGIENE.
12227 APTIC NO. 29725

ABSORPTION OF SULFUROUS ACID GAS BY WATER SOLUTION OF POTASSIUM PHOSPHATE.
12172 APTIC NO. 29731

ON REGENERATION OF ACTIVATED CARBON HAVING ADSORBED SO2.
12173 APTIC NO. 29732

DEVELOPMENT OF GAS PURIFICATION INSTALLATIONS FOR ELECTRIC MELTING FURNACES.
12204 APTIC NO. 29740

DESULFURIZATION.
12242 APTIC NO. 29742

SEPARATION OF CO2 AND H2S FROM GAS MIXTURES.
12086 APTIC NO. 29752

ON PUBLIC NUISANCE BY, AND ENVIRONMENTAL HYGIENE OF, PAINT MANUFACTURING INDUSTRY.
12059 APTIC NO. 29761

PURIX WET COLLECTOR FOR WASTE GAS CLEANING.
12060 APTIC NO. 29767

BAGHOUSE OPERATION AT THE WHITING, INDIANA PLANT OF THE FEDERATED METALS DIVISION AMERICAN SMELTING AND REFINING COMPANY.
12107 APTIC NO. 29772

GASIFICATION OF HYDROCARBONS.
12137 APTIC NO. 29779

ADSORPTIVITY OF DESULFURIZING ACTIVATED CARBON FOR SULFUROUS ACID GAS (II) - EFFECT OF THE ADSORPTION - RINSING PROCESS ON THE ADSORPTIVITY.
12238 APTIC NO. 29788

REMOVAL OF CHLORINE FROM GASES.
12177 APTIC NO. 29802

ELECTRIC DUST COLLECTION DEVICE.
12151 APTIC NO. 29819

MODERN OIL BURNING TECHNOLOGY AS DISPLAYED ON THE INTHERM IN STUTTGART AND THE 6.ISH IN FRANKFURT 1971.
12187 APTIC NO. 29824

PROGRESS IN DEDUSTING TECHNIQUE IN CEMENT WORKS.
12125 APTIC NO. 29830

ACID MIST PRECIPITATOR MADE OF TEFLON FIBER.
12061 APTIC NO. 29833

ALKALI AND HEAT RECOVERY IN THE FLUE GASES FROM RECOVERY BOILERS.
12193 APTIC NO. 29852

NEW PROCESS OFFERS 99.9% SULPHUR RECOVERY.
12062 APTIC NO. 29855

EXPERIMENTAL RESEARCH ON LOW EXCESS AIR COMBUSTION IN BOILER BURNING HEAVY OIL ONLY.
12142 APTIC NO. 29860

THE NEW DUPLEX IRON MELTING PLANT AT THE M. BUSCH KG IN WEHRSTAPEL.
12094 APTIC NO. 29861

DESULFURIZATION OF EXHAUST GAS.
12078 APTIC NO. 29927

EQUALIZATION OF PARTICLE TRANSFER IN TRANSFERABLE STRATUM.
12144 APTIC NO. 29928

TO PREVENT HEAVY OIL COMBUSTION GAS FROM PRODUCING BLACK SMOKE.
12213 APTIC NO. 29930

ADSORPTIVITY OF DESULFURIZING ACTIVATED CARBON FOR SULFUROUS ACID GAS (1). PERFORMANCE VARIATION OF ACTIVATED CARBON IN PILOT PLANT.
12206 APTIC NO. 29939

STUDIES ON AIR POLLUTION CONTROL BY ADDITIVE INJECTION. PART II - PREVENTION OF CLOGGING AT HIGH TEMPERATURE HEATING SURFACE OF BOILER BY ADDING MG(OH)2 POWDER.
12075 APTIC NO. 29941

ACTIVATED CARBON INDUSTRY AND PROBLEMS IN FUTURE - SPHERICAL ACTIVATED CARBON FROM COAL.
12235 APTIC NO. 29942

REMOVAL OF BROWN FUME FROM WASTE GASES OF OPEN HEARTH FURNACE OXYGEN STEELMAKING PROCESS.
12194 APTIC NO. 29945

DESULFURIZATION OF WASTE GASES AND FUELS.
12205 APTIC NO. 29957

STUDY ON THE DESULFURIZATION OF FLUE GAS BY THE USE OF DRY LIME.
12198 APTIC NO. 29972

USE OF VANADIUM CATALYSTS IN PURIFYING INDUSTRIAL WASTE GASES FROM SULFUR DIOXIDE.
12087 APTIC NO. 29980

HIGH-CONCENTRATION SULFUR DIOXIDE FROM CALCINING PYRITES IN THE DKSM FURNACE.
12157 APTIC NO. 29982

COMBUSTION OF WASTES CENTERING AROUND REMOVAL OF NOXIOUS GAS.
12077 APTIC NO. 29985

METHOD FOR MANUFACTURING SPHERICAL ACTIVE CARBON FROM COAL.
12141 APTIC NO. 29988

FACTORS TO CONSIDER IN SELECTING AIR POLLUTION CONTROL EQUIPMENT.
12195 APTIC NO. 29996

ELIMINATION OF OXIDES CONTAINED IN CERTAIN RESIDUAL INDUSTRIAL GASES.
12129 APTIC NO. 30043

KINETICS OF RECOVERING SULFUR FROM THE SPENT SEED IN AN MHD POWER PLANT.
12118 APTIC NO. 30048

PROCESS FOR REMOVING SULPHUR FROM GASES.
12139 APTIC NO. 30049

CONTROL OF POLLUTANT EMISSION AND SULPHURIC ACID CORROSION FROM COMBUSTION OF RESIDUAL FUEL OIL. PART I: LOW-PRESSURE HEATING BOILERS WITH MECHANICAL ATOMIZING BURNERS.
12164 APTIC NO. 30055

JOINT DEMONSTRATION OF METHODS FOR EXTINGUISHMENT AND CONTROL OF BURNING COAL REFUSE PILES. (FINAL REPORT).
12066 APTIC NO. 30057

PULPERS APPLY ODOR CONTROL.
12104 APTIC NO. 30062

SULFURIC ACID, SO2 DEVELOPMENTS: REMOVING SO2 AND ACID MIST WITH VENTURI SCRUBBERS.
12209 APTIC NO. 30080

ON A DUST-COLLECTING DEVICE FOR A FERROSILICON FURNACE.
12219 APTIC NO. 30086

THE SCRUBBING OF TAIL GAS FROM SULFURIC ACID PLANTS.
12067 APTIC NO. 30096

SUMMARY OF H2SO4 MANUFACTURE.
12068 APTIC NO. 30099

REDUCING SO2 EMISSION FROM STATIONARY SOURCES.
12098 APTIC NO. 30102

STUDY ON DESULFURIZATION BY THE INJECTION OF LIMESTONE POWDER INTO FURNACE OF OIL FIRING BOILER (PART I).
12145 APTIC NO. 30131

A NEW METHOD OF MEASURING THE OPACITY OF COMBUSTION FUMES.
12249 APTIC NO. 29068

REPORT FOR THE INVESTIGATION ON THE METHOD OF SO2 TEST.
12301 APTIC NO. 29381

ANALYZERS FOR MONITORING AIR QUALITY IN POLLUTION.
12272 APTIC NO. 29634

JIS ANALYTICAL PROCESS FOR NITROGEN OXIDES IN WASTE GAS.
12355 APTIC NO. 29677

EXPERIENCES WITH FLUORINE EMISSION MEASUREMENTS.
12290 APTIC NO. 29737

DETERMINATION OF THE SOOT INDEX IN WASTE GASES OF OIL BURNERS.
12257 APTIC NO. 29749

STUDY OF TRACES OF HEAVY ORGANIC PRODUCTS IN FUEL COMBUSTION GASES. (Etude des traces de produits organiques lourds dans les fumees de combustion de fuel). Text in French. Rev. Gen. Thermique (Paris), 10(111):223-238, March 1971. 90 refs.
12310 APTIC NO. 29766

INVESTIGATION OF ACTIVATION ANALYSIS OF TRACE MERCURY IN GAS BY RADIOISOTOPE TRACER METHOD.
12328 APTIC NO. 29770

SIMPLIFIED TECHNIQUES IN AIR POLLUTION MEASUREMENT.
12289 APTIC NO. 29771

DETERMINATION OF ORGANICALLY BOUND CARBON IN MOIST WASTE GASES.
12345 APTIC NO. 29839

PRODUCTION OF GASES OF KNOWN SPECIFIC ACTIVITY IN A REACTOR FOR CALIBRATING GASEOUS EFFLUENT MONITORS.
12264 APTIC NO. 29848

DETERMINATION OF AROMATIC HYDROCARBONS EMITTED FROM THE DRY BATTERY PLANT.
12287 APTIC NO. 29862

QUANTITATIVE ALDEHYDE DETERMINATION IN THE AIR OF WORKING PLACES.
12317 APTIC NO. 30023

ATMOSPHERIC POLLUTION. APPARATUS FOR MEASURING THE CONCENTRATION OF CONDENSATION NUCLEI IN THE ATMOSPHERE.
12267 APTIC NO. 30041

A MATHEMATICAL MODEL FOR MEASURING MASS/NUMBER INDEX OF RESPIRABLE AIRBORNE COAL DUST.
12258 APTIC NO. 30081

DEVELOPMENT OF A METHOD FOR DETERMINING SULPHUR OXIDES IN FLUE GASES.
12265 APTIC NO. 30084

SOURCE SAMPLING OF ATMOSPHERIC CONTAMINANTS.
12248 APTIC NO. 30118

MERCURY IN THE AIR.
12362 APTIC NO. 29490

AIR POLLUTION.
12363 APTIC NO. 29510

TEN YEARS OF AIR POLLUTION IN HOKKAIDO.
12367 APTIC NO. 29727

A STUDY OF AIR POLLUTION AROUND A SULPHURIC ACID PLANT.
12374 APTIC NO. 29883

POLLUTIONS AND TOKYO METROPOLITAN GOVERNMENT.
12365 APTIC NO. 29973

PROBLEMS OF AIR POLLUTION AND MEASURES TO COMBAT IT IN EL PASO, TEXAS.
12368 APTIC NO. 30094

THE PREVENTION OF POLLUTION.
12416 APTIC NO. 29623

EVALUATION TRIALS OF URBAN AIR POLLUTION MODELS.
12439 APTIC NO. 29697

NO-X CONTROL FROM STATIONARY SOURCES.
12427 APTIC NO. 29764

ATMOSPHERIC DISPERSION OF STACK EFFLUENTS.
12458 APTIC NO. 29773

ATMOSPHERIC REACTIONS AND SCAVENGING PROCESSES.
12426 APTIC NO. 29774

ESTIMATION OF GROUND LEVEL CONCENTRATION BY SMOKE-DIFFUSION WIND TUNNELS.
12462 APTIC NO. 29820

TURBULENT DIFFUSION THEORY TAKING TURBULENT BOUNDARY LAYER INTO CONSIDERATION.
12463 APTIC NO. 29822

THE EFFECT OF ATMOSPHERIC CONDITIONS ON PLUME RISE.
12455 APTIC NO. 29865

BORDEAUX. STUDY OF ATMOSPHERIC POLLUTION IN THE BUILT-UP AREA.
12420 APTIC NO. 30109

CARBON MONOXIDE AS TOXIC GAS.
12538 APTIC NO. 29640

ON DAMAGE TO PLANTS BY FLUORIDES IN EXHAUST GAS FROM TILE MANUFACTURING FACTORY.
12606 APTIC NO. 29597

PROBLEMS OF FLUORINE EMISSION MEASUREMENTS.
12608 APTIC NO. 29736

COMPLEX ALKALI IRON SULFATES A CONTRIBUTION TO THE THERMODYNAMICS OF FIRESDIDE HIGH-TEMPERATURE CORROSION.
12616 APTIC NO. 29783

A STUDY OF THE CONVERSION OF SO2 TO SO3.
12623 APTIC NO. 30022

AN SO2 REMOVAL AND RECOVERY PROCESS.
12630 APTIC NO. 29144

VALUE ANALYSIS OF COAL.
12629 APTIC NO. 30122

ATMOSPHERIC POLLUTANTS FRENCH LEGISLATION. STANDARD MEASURING METHODS. RECENT COMMERCIAL APPARATUS.
12638 APTIC NO. 29003

INDUSTRIAL REACTION TO SULPHUR DIOXIDE CONTROL EQUIPMENT AND STANDARDS.
12637 APTIC NO. 29604

ADDENDUM TO ENVIRONMENTAL POLLUTIONS IN KAWASAKI CITY.
12647 APTIC NO. 29511

PRESENT SITUATION OF ADMINISTRATION CONCERNING POLLUTIONS.
12648 APTIC NO. 29598

CHIBA PREFECTURAL ORDINANCE ON POLLUTIONS CONTROL AND ENFORCEMENT REGULATION OF ORDINANCE.
12649 APTIC NO. 29679

POLLUTIONS PREVENTION PLAN FOR CHIBA AND ICHIHARA CITIES IN CHIBA PREFECTURE.
12650 APTIC NO. 29813

CASTING WORK ENVIRONMENTS AND PUBLIC NUISANCE.
12655 APTIC NO. 29975

NOBODY BREATHES FRESH AIR. FACTS AND ARGUMENTS ABOUT AIR POLLUTION.
12677 APTIC NO. 29459

ON SOME BASIC PROBLEMS OF THE PURIFICATION OF THE AIR.
12676 APTIC NO. 29591

COMMERCIAL AREAS

STUDY OF THE SUSPENDED PARTICULATES AND LEAD CONCENTRATION IN THE AIR WITHIN THE CITY LIMITS OF MAGDEBURG.
12382 APTIC NO. 29515

TEN YEARS OF AIR POLLUTION IN HOKKAIDO.
12367 APTIC NO. 29727

SEASONAL VARIATION OF THE CONCENTRATION OF HEAVY METALS IN SUSPENDED DUST ON THE MAIN STREETS.
12384 APTIC NO. 30025

THE TENDENCY OF AIR POLLUTION AT NAGOYA CITY OBSERVED FROM THE WEIGHT OF FALLING DUST.
12396 APTIC NO. 30076

ADDITION OF LEAD TO FUEL - HARMFUL OR DANGEROUS? (Bleizusaetze im Kraftstoff - harmlos oder gefaehrlich)? Text in German. VDI (Ver. Deut. Ingr.) Nachr. (Berlin), 25(9):6, 1971.
12527 APTIC NO. 30000

LONG RANGE PLANNING IN AIR RESOURCE MANAGEMENT.
12657 APTIC NO. 30056

COMMERCIAL EQUIPMENT

PLAIN TALK FOR EQUIPMENT SELLERS--AND BUYERS.
12089 APTIC NO. 29618

H-OIL AS A TOOL FOR LOW SULFUR FUEL PRODUCTION.
12126 APTIC NO. 29808

ESSO/UNION FUEL OIL HYDRODESULFURIZATION PROCESSES. PART II: COMMERCIAL EXPERIENCE WITH GO-FINING.
12096 APTIC NO. 29926

MEASUREMENTS OF AIRBORNE DUST.
12288 APTIC NO. 29885

COMMERCIAL FIRMS

VEHICLE EMISSIONS.
12027 APTIC NO. 29894

ENVIRONMENTAL CONTROL AND THE INSURANCE SAFETY ENGINEER.
12170 APTIC NO. 29115

PLAIN TALK FOR EQUIPMENT SELLERS--AND BUYERS.
12089 APTIC NO. 29618

ON PUBLIC NUISANCE BY, AND ENVIRONMENTAL HYGIENE OF, PAINT MANUFACTURING INDUSTRY.
12059 APTIC NO. 29761

BAGHOUSE OPERATION AT THE WHITING, INDIANA PLANT OF THE FEDERATED METALS DIVISION AMERICAN SMELTING AND REFINING COMPANY.
12107 APTIC NO. 29772

POLLUTION CONTROL AT THE SAGAMIHARA PLANT OF OUR TOKYO MACHINERY WORKS.
12199 APTIC NO. 29821

DESULFURIZATION OF WASTE GASES AND FUELS.
12205 APTIC NO. 29957

INSTRUMENTS AND THEIR APPLICATIONS IN MASS SPECTROMETRY.
12261 APTIC NO. 29579

MEASUREMENTS OF AIRBORNE DUST.
12288 APTIC NO. 29885

POLLUTIONS AND TOKYO METROPOLITAN GOVERNMENT.
12365 APTIC NO. 29973

THE ECONOMIC IMPORTANCE OF POLLUTION CONTROL.
12626 APTIC NO. 30054

ON OUTLINE OF MACHINERY CREDIT INSURANCE AND ITS APPLICATION TO DUST COLLECTION EQUIPMENT.
12634 APTIC NO. 30087

VALUE ANALYSIS OF COAL.
12629 APTIC NO. 30122

FAST WRITE-OFF AND OTHER TAX RELIEF.
12627 APTIC NO. 30128

ADDENDUM TO ENVIRONMENTAL POLLUTIONS IN KAWASAKI CITY.
12647 APTIC NO. 29511

PRESENT SITUATION OF ADMINISTRATION CONCERNING POLLUTIONS.
12648 APTIC NO. 29598

POLLUTIONS PREVENTION PLAN FOR CHIBA AND ICHIHARA CITIES IN CHIBA PREFECTURE.
12650 APTIC NO. 29813

THE ROLE OF INDUSTRY--AIR QUALITY.
12661 APTIC NO. 29845

CASTING WORK ENVIRONMENTS AND PUBLIC NUISANCE.
12655 APTIC NO. 29975

COMPLAINTS

ON PUBLIC NUISANCE BY, AND ENVIRONMENTAL HYGIENE OF, PAINT MANUFACTURING INDUSTRY.
12059 APTIC NO. 29761

TEN YEARS OF AIR POLLUTION IN HOKKAIDO.
12367 APTIC NO. 29727

POLLUTIONS AND TOKYO METROPOLITAN GOVERNMENT.
12365 APTIC NO. 29973

PRESENT SITUATION OF ADMINISTRATION CONCERNING POLLUTIONS.
12648 APTIC NO. 29598

COMPLIANCE

THE IRRITANT POTENTIAL OF POLLUTANTS IN THE ATMOSPHERE.
12271 APTIC NO. 29751

COMPRESSED GASES

THE NEW PLANT FOR PRODUCTION OF SULFUR DIOXIDE AT LEVERKUSEN.
12203 APTIC NO. 29577

DESULFURIZATION OF LIQUEFIED PROPANE GAS. MOLECULAR SIEVE PROCESS.
12053 APTIC NO. 29617

STUDY ON AUTO EXHAUST.
12241 APTIC NO. 29909

COMPRESSION

THE NEW PLANT FOR PRODUCTION OF SULFUR DIOXIDE AT LEVERKUSEN.
12203 APTIC NO. 29577

COMPUTER PROGRAMS

A COMPUTERIZED METHOD FOR SIZE CHARACTERIZATION OF ATMOSPHERIC AEROSOLS BY THE SCANNING ELECTRON MICROSCOPE.
12266 APTIC NO. 30019

LONG RANGE PLANNING IN AIR RESOURCE MANAGEMENT.
12657 APTIC NO. 30056

COMPUTERS

INFRARED FOURIER TRANSFORM SPECTROSCOPY IN FLAVOR ANALYSIS III.
12312 APTIC NO. 29056

A MEASUREMENT GRID FOR AIR POLLUTION IN THE MOUTH OF THE RIVER RHINE IN ROTTERDAM.
12333 APTIC NO. 29460

PARTICLE SIZE MEASURING WITH THE TELEVISION MICROSCOPE QUANTIMET FOR SIZES MINUS 4 MICRONS.
12304 APTIC NO. 29512

COMPUTER APPLICATION IN THE ENVIRONMENTAL SCIENCE ANALYSIS

AND CONTROL OF ENVIROMENTAL AIR.
12335 APTIC NO. 29657

REPORT FROM THE NETHERLANDS: MEASUREMENT GRID FOR AIR POLLUTION.
12364 APTIC NO. 29798

DISSIPATION AND PRECIPITATION OF DUST EMITTED BY A STEELWORKS.
12466 APTIC NO. 29829

DISSIPATION OF SO2 GENERATED IN A STEELWORK INTO THE GROUND LAYER OF THE ATMOSPHERE.
12467 APTIC NO. 29867

CONCRETE

EXPERIENCE WITH INDUSTRIAL MULTI-FLUE CHIMNEYS OF 100-200 IN HEIGHT.
12473 APTIC NO. 29890

CONDENSATION

CAUSES, MEASUREMENT AND LIMITATION OF PARTICULATE EMISSION FROM OIL-FIRED STEAM BOILERS.
12000 APTIC NO. 30021

HEAT EXTRACTION AIDS DEPOLLUTION OF GASES AND WATER IN CHEVROLET FOUNDRY.
12097 APTIC NO. 29523

PROBLEM OF OBNOXIOUS ODOR IN INDUSTRIAL POLLUTIONS.
12202 APTIC NO. 29745

STEAM-SMOKE MIST CONTACT DEVICE.
12174 APTIC NO. 29792

DETERMINATION OF ORGANICALLY BOUND CARBON IN MOIST WASTE GASES.
12345 APTIC NO. 29839

INTERNATIONAL CONFERENCE ON CONDENSATION NUCLEI AND ICE-FORMING NUCLEI.
12454 APTIC NO. 29699

CONDENSATION (ATMOSPHERIC

ATMOSPHERIC POLLUTION. APPARATUS FOR MEASURING THE CONCENTRATION OF CONDENSATION NUCLEI IN THE ATMOSPHERE.
12267 APTIC NO. 30041

A COMPREHENSIVE SAMPLING SYSTEM FOR STUDYING THE RELATION BETWEEN VISIBILITY, METEOROLOGICAL PARAMETERS AND ATMOSPHERIC POLLUTION.
12276 APTIC NO. 30082

LEAD POLLUTION AND PHOTOCHEMICAL SMOG IN TOKYO.
12376 APTIC NO. 29647

THE PREVENTION OF POLLUTION.
12416 APTIC NO. 29623

FORMATION OF FOG ON THE NUCLEI OF HUMIDITY CONDENSATION.
12453 APTIC NO. 29636

MICROSTRUCTURE OF ATMOSPHERIC SURFACE LAYER AEROSOLS.
12433 APTIC NO. 29668

SCAVENGING IN PERSPECTIVE.
12422 APTIC NO. 29688

INTERACTIONS OF CLOUD CONDENSATION NUCLEI AND ICE NUCLEI WITH CLOUD AND PRECIPITATION ELEMENTS: A REVIEW.
12443 APTIC NO. 29692

INTERNATIONAL CONFERENCE ON CONDENSATION NUCLEI AND ICE-FORMING NUCLEI.
12454 APTIC NO. 29699

CONTINUOUS CHARGED CLOUD-PARTICLE SAMPLER.
12451 APTIC NO. 29712

THERMAL-DIFFUSION CHAMBERS AS CLOUD-NUCLEI COUNTERS.
12452 APTIC NO. 29714

FORMATION OF PARTICLES BY PHOTOLYSIS AND RADIOLYSIS.
12407 APTIC NO. 29809

CARBON MONOXIDE IN RAINWATER.
12460 APTIC NO. 29880

RADIANCE AND POLARIZATION OF LIGHT REFLECTED FROM OPTICALLY THICK CLOUDS.
12429 APTIC NO. 29915

ATTACHMENT OF TRACE SUBSTANCES ON ATMOSPHERIC AEROSOLS.
12409 APTIC NO. 30046

SOME RESULTS OF LIDAR PROBING OF THE TROPOSHERE.
12434 APTIC NO. 30105

NEW TREND IN POLLUTIONS COUNTERMEASURES IN THE 70 S.
12660 APTIC NO. 29507

CONING

ATMOSPHERIC DISPERSION OF STACK EFFLUENTS.
12458 APTIC NO. 29773

CONSTRUCTION MATERIALS

CONSIDERATIONS IN THE CONSTRUCTION OF LARGE REFUSE INCINERATORS.
12026 APTIC NO. 29547

INCINERATOR DESIGNED TO ANTICIPATE PROBLEMS.
11994 APTIC NO. 29669

MARKET DEVELOPMENT IN GAS ECONOMY.
12010 APTIC NO. 29781

CEMENT DUST AT GREAT BRITAIN.
12001 APTIC NO. 29832

POLLUTION CONTROL SYSTEMS FOR ASPHALT PLANTS.
12233 APTIC NO. 29492

MEASURES TAKEN BY THE REGIONAL SOCIAL SECURITY ADMINISTRATION OF LIMOGES TO REDUCE THE RISKS OF SILICOSIS.
12171 APTIC NO. 29561

ELECTROSTATIC PRECIPITATORS FOR CEMENT AND LIME INDUSTRY.
12169 APTIC NO. 29735

PROGRESS IN DEDUSTING TECHNIQUE IN CEMENT WORKS.
12125 APTIC NO. 29830

DUST COLLECTING SYSTEMS IN CEMENT WORKS.
12106 APTIC NO. 29831

DETERMINATION OF A DOCTRINE FOR VALID SAMPLING.
12273 APTIC NO. 29560

EXPERIENCE WITH INDUSTRIAL MULTI-FLUE CHIMNEYS OF 100-200 IN HEIGHT.
12473 APTIC NO. 29890

EXPANSION AND STRENGTHENING OF AIR POLLUTION CONTROL COUNTERMEASURES.
12671 APTIC NO. 29495

CONTACT PROCESSING

MODERN SULFURIC ACID TECHNOLOGY.
12093 APTIC NO. 29607

FEASIBILITY STUDY OF NEW SULFUR OXIDE CONTROL PROCESSES FOR APPLICATION TO SMELTERS AND POWER PLANTS. PART IV: THE WELLMAN-LORD SO2 RECOVERY PROCESS FOR APPLICATION TO POWER PLANT FLUE GASES. (FINAL REPORT).
12208 APTIC NO. 29641

NEW PROCESS OFFERS 99.9% SULPHUR RECOVERY.
12062 APTIC NO. 29855

SULFURIC ACID, SO2 DEVELOPMENTS: REMOVING SO2 AND ACID MIST WITH VENTURI SCRUBBERS.
12209 APTIC NO. 30080

SUMMARY OF H2SO4 MANUFACTURE.
12068 APTIC NO. 30099

CONTINUOUS MONITORING

PROBLEMS OF PUBLIC NUISANCE CAUSED BY BAD ODORS IN HYOGO PREFECTURE.
12029 APTIC NO. 29599

PESTICIDES IN AIR. VOLATILIZATION OF SOIL-APPLIED DDT AND DDD FROM FLOODED AND NONFLOODED PLOTS.
12047 APTIC NO. 29620

ATMOSPHERIC POLLUTION IN HEADINGS FOLLOWING SHOTFIRING.
12024 APTIC NO. 29678

ON DISPOSAL OF PLASTIC WASTES (PVC) BY FLUID LAYER OF MEDIUM.
12074 APTIC NO. 29449

SMELTER POLLUTION CONTROL--FACTS AND PROBLEMS.
12076 APTIC NO. 29622

INVESTIGATION ON THE MEASURING ERRORS OF CONDUCTOMETRIC SULFUR DIOXIDE ANALYZER USED FOR AIR POLLUTION MONITOR.
12356 APTIC NO. 29398

JIS ANALYTICAL PROCESS FOR NITROGEN OXIDES IN WASTE GAS.
12355 APTIC NO. 29677

PROGRESS IN MEASUREMENT OF AIR POLLUTION.
12350 APTIC NO. 29748

ON THE CONTINUOUS MEASUREMENT AND RECORDING OF OXIDANTS BY ELECTRIC CONDUCTIVITY METHOD.
12293 APTIC NO. 29758

TRIAL CONSTRUCTION OF NON-DISPERSION TYPE VISIBLE LIGHT GAS ANALYZE AND DETERMINATION OF NITROGEN DIOXIDE, CHLORINE, AND BROMINE.
12303 APTIC NO. 29762

METHODS OF DETERMINING SULFUR DIOXIDE (REVIEW).
12305 APTIC NO. 29801

EMISSION MONITORING WITH ACKNOWLEDGED MEASURING UNITS AND ANALYZERS.
12260 APTIC NO. 29955

A METER FOR THE SITE DETERMINATION OF HYDROLYSABLE FLUORIDES IN SULPHUR HEXAFLUORIDE.
12336 APTIC NO. 30007

SMOKE PLUMES MONITORED DAY AND NIGHT. PRACTICAL EXPERIENCE WITH A TV-LASER PLANT IN DUISBURG.
12247 APTIC NO. 30013

SOURCE SAMPLING OF ATMOSPHERIC CONTAMINANTS.
12248 APTIC NO. 30118

AIR POLLUTION BY SMOKE AND SO2.
12372 APTIC NO. 29289

AIR POLLUTION BY SMOKE AND SO2.
12373 APTIC NO. 29566

LEAD POLLUTION AND PHOTOCHEMICAL SMOG IN TOKYO.
12376 APTIC NO. 29647

REPORT FROM THE NETHERLANDS: MEASUREMENT GRID FOR AIR POLLUTION.
12364 APTIC NO. 29798

CLEANER AIR IN LONDON.
12377 APTIC NO. 29912

CONTINUOUS CHARGED CLOUD-PARTICLE SAMPLER.
12451 APTIC NO. 29712

TURBULENT DIFFUSION THEORY TAKING TURBULENT BOUNDARY LAYER INTO CONSIDERATION.
12463 APTIC NO. 29822

OXIDATION STUDY ON ATMOSPHERIC AGING OF POLYMERS.
12622 APTIC NO. 29826

ATMOSPHERIC POLLUTANTS FRENCH LEGISLATION. STANDARD MEASURING METHODS. RECENT COMMERCIAL APPARATUS.
12638 APTIC NO. 29003

IT BEGAN WITH THE SMOG IN CALIFORNIA. CALIFORNIA TEST, EUROPEAN TEST--INTERNATIONAL REGULATIONS OF AUTOMOBILE EXHAUST GAS EMISSIONS.
12640 APTIC NO. 30069

CONTINUOUS MEASUREMENT SYSTEM OF ATMOSPHERIC POLLUTION AT THE MOUTH OF THE RHINE, NEAR ROTTERDAM.
12645 APTIC NO. 28696

CONTROL AGENCIES

TOWARD A RATIONAL POWER POLICY: RECONCILING NEEDS FOR ENERGY AND ENVIRONMENTAL PROTECTION.
12403 APTIC NO. 29986

HOW THE LAWS AND AGENCIES AFFECT YOU.
12641 APTIC NO. 29113

NEW TREND IN POLLUTIONS COUNTERMEASURES IN THE 70 S.
12660 APTIC NO. 29507

ON THE BASIC LAW FOR ENVIRONMENTAL POLLUTION CONTROL, NOISE CONTROL LAW, WATER POLLUTION PREVENTION LAW, AND AIR POLLUTION PREVENTION LAW.
12670 APTIC NO. 29509

THE TASKS OF THE PUBLIC HEALTH SYSTEM IN THE FIELD OF THE HYGIENE OF THE AIR IN THE PEOPLE S REPUBLIC OF HUNGARY.
12667 APTIC NO. 29592

THE TASKS OF THE PUBLIC HYGIENE SYSTEM OF THE USSR IN THE FIELD OF THE PURIFICATION OF THE AIR.
12665 APTIC NO. 29594

CHIBA PREFECTURAL ORDINANCE ON POLLUTIONS CONTROL AND ENFORCEMENT REGULATION OF ORDINANCE.
12649 APTIC NO. 29679

MATERIALS FOR REFERENCE ABOUT ENVIRONMENTAL POLLUTION CONTROL.
12651 APTIC NO. 29818

COMPARATIVE STUDY OF CERTAIN PROVISIONS IN MEMBER STATES FOR CONTROLLING AIR POLLUTION.
12656 APTIC NO. 30052

CONTROL PROGRAMS

CLOSE SCRUTINY OF AUTOMOBILE EXHAUST GASES. TECHNICAL INSPECTION SERVICE FOR AUTOMOBILES IN NEW PREMISES.
12005 APTIC NO. 30002

POLLUTIONS AND TOKYO METROPOLITAN GOVERNMENT.
12365 APTIC NO. 29973

CONCASTER, AN AREA STUDY.
12366 APTIC NO. 30047

PROBLEMS OF AIR POLLUTION AND MEASURES TO COMBAT IT IN EL PASO, TEXAS.
12368 APTIC NO. 30094

AIR POLLUTION IN AN URBAN ENVIRONMENT.
12413 APTIC NO. 30045

ITAI-ITAI (OUCH-OUCH) DISEASE AND CADMIUM POLLUTION IN JAPAN.
12581 APTIC NO. 29673

AIR POLLUTION.
12575 APTIC NO. 29949

THE ECONOMIC IMPORTANCE OF POLLUTION CONTROL.
12626 APTIC NO. 30054

NEW TREND IN POLLUTIONS COUNTERMEASURES IN THE 70 S.
12660 APTIC NO. 29507

ON THE BASIC LAW FOR ENVIRONMENTAL POLLUTION CONTROL, NOISE CONTROL LAW, WATER POLLUTION PREVENTION LAW, AND AIR POLLUTION PREVENTION LAW.
12670 APTIC NO. 29509

ADDENDUM TO ENVIRONMENTAL POLLUTIONS IN KAWASAKI CITY.
12647 APTIC NO. 29511

PRESENT SITUATION OF ADMINISTRATION CONCERNING POLLUTIONS.
12648 APTIC NO. 29598

POLLUTIONS PREVENTION PLAN FOR CHIBA AND ICHIHARA CITIES IN CHIBA PREFECTURE.
12650 APTIC NO. 29813

MATERIALS FOR REFERENCE ABOUT ENVIRONMENTAL POLLUTION CONTROL.
12651 APTIC NO. 29818

TOKYO FIGHTS POLLUTION. AN URGENT APPEAL FOR REFORM.
12653 APTIC NO. 29888

THE EVOLUTION OF AIR POLLUTION CONTROL LAWS.
12672 APTIC NO. 30020

LEGAL ASPECTS OF AIR POLLUTION IN BELGIUM AND OTHER NEIGHBORING COUNTRIES.
12659 APTIC NO. 30040

LONG RANGE PLANNING IN AIR RESOURCE MANAGEMENT.
12657 APTIC NO. 30056

CONTROLLED ATMOSPHERES

STUDIES OF VENTILATORY MEASURES INDOORS AGAINST POLLEN ALLERGY.
12116 APTIC NO. 30011

AIR FILTRATION SYSTEM FOR ELECTRIC FURNACE SWITCH GEAR AT LUKENS STEEL.
12065 APTIC NO. 30018

CONVECTION (ATMOSPHERIC)

ATMOSPHERIC DISPERSION OF STACK EFFLUENTS.
12458 APTIC NO. 29773

DISCUSSIONS DEPTH OF THE BOUNDARY LAYER.
ERROR

COOLING

AMMONIA DISPOSAL--COKE PLANTS.
12012 APTIC NO. 29627

OPERATING EXPERIENCE OF EVAPORATIVE COOLERS SERVING CUPOLAS AIR POLLUTION CONTROL SYSTEMS.
12034 APTIC NO. 30032

PROCESS FOR THE SEPARATION OF SULFUR FROM GAS.
12052 APTIC NO. 29273

HEAT EXTRACTION AIDS DEPOLLUTION OF GASES AND WATER IN CHEVROLET FOUNDRY.
12097 APTIC NO. 29523

THE NEW PLANT FOR PRODUCTION OF SULFUR DIOXIDE AT LEVERKUSEN.
12203 APTIC NO. 29577

MODERN SULFURIC ACID TECHNOLOGY.
12093 APTIC NO. 29607

POLLUTION REGULATIONS AND THEIR EFFECT ON VEHICLE PREPARATION.
12112 APTIC NO. 29659

NEW PROCESS OFFERS 99.9% SULPHUR RECOVERY.
12062 APTIC NO. 29855

THE NEW DUPLEX IRON MELTING PLANT AT THE M. BUSCH KG IN WEHRSTAPEL.
12094 APTIC NO. 29861

ON A DUST-COLLECTING DEVICE FOR A FERROSILICON FURNACE.
12219 APTIC NO. 30086

SIMPLIFIED TECHNIQUES IN AIR POLLUTION MEASUREMENT.
12289 APTIC NO. 29771

COPPER

INVESTIGATION OF HEAVY METAL POLLUTION IN IWAKI CITY.
12007 APTIC NO. 29787

BASIC RESEARCH ON SMOKE DESULFURIZATION BY LIME-METALS, 1ST REPORT - DESULFURIZATION EFFECT BY ADDITION OF METAL.
12154 APTIC NO. 29478

SMELTER POLLUTION CONTROL--FACTS AND PROBLEMS.
12076 APTIC NO. 29622

BAGHOUSE OPERATION AT THE WHITING, INDIANA PLANT OF THE FEDERATED METALS DIVISION AMERICAN SMELTING AND REFINING COMPANY.
12107 APTIC NO. 29772

TFE-FLUOROCARBON FIBER FILTER BAGS-fIT COSTS MORE TO GO FIRST CLASS.
12109 APTIC NO. 30121

AIR POLLUTION.
12363 APTIC NO. 29510

THE ADSORPTION OF CARBON MONOXIDE ON CU(001) LEED AND AUGER EMISSION STUDIES.
12496 APTIC NO. 29799

THE MECHANISM OF ATMOSPHERIC RUSTING AND THE EFFECT OF CU AND P ON THE RUST FORMATION OF LOW ALLOY STEELS.
12615 APTIC NO. 29631

COPPER ALLOYS

BAGHOUSE OPERATION AT THE WHITING, INDIANA PLANT OF THE FEDERATED METALS DIVISION AMERICAN SMELTING AND REFINING COMPANY.
12107 APTIC NO. 29772

COPPER COMPOUNDS

HEAVY METAL POLLUTION IN THE ONAHAMA INDUSTRIAL AREA. 1ST REPORT. DISTRIBUTION OF HEAVY METALS IN SOIL.
12006 APTIC NO. 29539

INVESTIGATION OF HEAVY METAL POLLUTION IN IWAKI CITY.
12007 APTIC NO. 29787

NEW METHOD OF MANUFACTURING CATALYST FOR EXHAUST GAS.
12133 APTIC NO. 29733

JIS ANALYTICAL PROCESS FOR NITROGEN OXIDES IN WASTE GAS.
12355 APTIC NO. 29677

PLANTS AND SOILS AS INDICATORS OF METALS IN THE AIR.
12281 APTIC NO. 30113

TRACE ELEMENTS IN ATMOSPHERIC PRECIPITATION AROUND THE OTKAZNOE RESERVOIR.
12432 APTIC NO. 29910

ON DAMAGE TO PLANTS BY FLUORIDES IN EXHAUST GAS FROM TILE MANUFACTURING FACTORY.
12606 APTIC NO. 29597

CORONA

OZONE AND AIR IONS ACCOMPANYING BIOLOGICAL APPLICATIONS OF ELECTRIC FIELDS.
12594 APTIC NO. 29897

CORROSION

CONSIDERATIONS IN THE CONSTRUCTION OF LARGE REFUSE INCINERATORS.
12026 APTIC NO. 29547

EXPERIMENTS CONCERNING STOICHIOMETRIC COMBUSTION IN OIL-FIRED FURNACES OF FRENCH POWER PLANTS.
12090 APTIC NO. 29513

MODERN OIL BURNING TECHNOLOGY AS DISPLAYED ON THE INTHERM IN STUTTGART AND THE 6.ISH IN FRANKFURT 1971.
12187 APTIC NO. 29824

ACID MIST PRECIPITATOR MADE OF TEFLON FIBER.
12061 APTIC NO. 29833

SELECTION OF FILTRATION EQUIPMENT FOR SULPHUR AND POTASH PROCESSING.
12160 APTIC NO. 29902

CONTROL OF POLLUTANT EMISSION AND SULPHURIC ACID CORROSION FROM COMBUSTION OF RESIDUAL FUEL OIL. PART I: LOW-PRESSURE HEATING BOILERS WITH MECHANICAL ATOMIZING BURNERS.
12164 APTIC NO. 30055

PROGRESS IN MEASUREMENT OF AIR POLLUTION.
12350 APTIC NO. 29748

DEVELOPMENT OF A METHOD FOR DETERMINING SULPHUR OXIDES IN FLUE GASES.
12265 APTIC NO. 30084

AIR POLLUTION.
12363 APTIC NO. 29510

CORROSION RATES OF MILD STEEL IN COASTAL, INDUSTRIAL, AND INLAND AREAS OF NORTHERN CALIFORNIA.
12620 APTIC NO. 28810

AIR POLLUTION AND ATMOSPHERIC CORROSION.
12613 APTIC NO. 29222

THE MECHANISM OF ATMOSPHERIC RUSTING AND THE EFFECT OF CU AND P ON THE RUST FORMATION OF LOW ALLOY STEELS.
12615 APTIC NO. 29631

COMPLEX ALKALI IRON SULFATES A CONTRIBUTION TO THE THERMODYNAMICS OF FIRESDIDE HIGH-TEMPERATURE CORROSION.
12616 APTIC NO. 29783

USING TITANIUM IN THE CHEMICAL PLANT.
12610 APTIC NO. 29857

ALUMINUM MATERIAL FOR THE CHEMICAL INDUSTRY.
12624 APTIC NO. 29922

ATMOSPHERIC CORROSION OF SILVER.
12614 APTIC NO. 29951

PROBLEMS IN INDUSTRIAL POWER PLANTS.
12618 APTIC NO. 29956

EFFECT OF LOW SILICIUM CONTENT AND SOME SURFACE TREATMENT ON THE OXIDATION OF CARBON STEELS IN CARBON DIOXIDE ATMOSPHERES AT MEDIUM TEMPERATURES.
12611 APTIC NO. 29995

A STUDY OF THE CONVERSION OF SO2 TO SO3.
12623 APTIC NO. 30022

ATMOSPHERIC CORROSION OF THE ELECTROLYTIC NI-CR COATINGS.
12609 APTIC NO. 30039

CORROSION OF NACL-CONTAMINATED FE IN HUMID ATMOSPHERE OF LOW O2 CONTENT.
12621 APTIC NO. 30112

COSMIC RAYS

POSSIBLE CORRELATION BETWEEN ATMOSPHERIC OZONE CONTENT AND COSMIC RAY INTENSITY VARIATIONS.
12369 APTIC NO. 30031

COSTS

INCINERATOR DESIGNED TO ANTICIPATE PROBLEMS.
11994 APTIC NO. 29669

MEASUREMENT DATA OBTAINED FROM EXPERIMENTS WITH THE DYNAVANE HIGH CAPACITY DRY TYPE DUST SEPARATOR.
12108 APTIC NO. 28791

TWO NEW PROCESSSES FOR RECOVERY OF SULPHUR OXIDES FROM SMELTER GASES.
12207 APTIC NO. 29200

HEAT EXTRACTION AIDS DEPOLLUTION OF GASES AND WATER IN CHEVROLET FOUNDRY.
12097 APTIC NO. 29523

OUTLOOK OF ENVIRONMENTAL POLLUTION AND ITS PREVENTION TECHNOLOGY.
12124 APTIC NO. 29600

ODOR TREATMENT AND ITS COST AT RENDERING FACTORIES.
12211 APTIC NO. 29601

TRANSPORTATION EMISSIONS.
12175 APTIC NO. 29605

FUTURE OF GASOLINE WITH LEAD ANTIKNOCKS.
12243 APTIC NO. 29625

FEASIBILITY STUDY OF NEW SULFUR OXIDE CONTROL PROCESSES FOR APPLICATION TO SMELTERS AND POWER PLANTS. PART IV: THE WELLMAN-LORD SO2 RECOVERY PROCESS FOR APPLICATION TO POWER PLANT FLUE GASES. (FINAL REPORT).
12208 APTIC NO. 29641

COUNTERMEASURES ON PREVENTION OF INDUSTRIAL POLLUTIONS--PART II ON SULFURIC ACID GAS.
12210 APTIC NO. 29646

POLLUTION REGULATIONS AND THEIR EFFECT ON VEHICLE PREPARATION.
12112 APTIC NO. 29659

DEVELOPMENT OF A NEW DUST COLLECTOR.
12056 APTIC NO. 29686

SULFUR DIOXIDE REMOVAL FROM STACK GASES.
12215 APTIC NO. 29720

ELECTROSTATIC PRECIPITATORS FOR CEMENT AND LIME INDUSTRY.
12169 APTIC NO. 29735

CAN ADDITIVES DECREASE DIESEL SMOKE? Power, 114(8):60, Aug. 1970.
12208 APTIC NO. 29641

ESSO/UNION FUEL OIL HYDRODESULFURIZATION PROCESSES. PART I: PROCESS APPLICATIONS AND DEVELOPMENT.
12180 APTIC NO. 29954

FACTORS TO CONSIDER IN SELECTING AIR POLLUTION CONTROL EQUIPMENT.
12195 APTIC NO. 29996

KINETICS OF RECOVERING SULFUR FROM THE SPENT SEED IN AN MHD POWER PLANT.
12118 APTIC NO. 30048

JOINT DEMONSTRATION OF METHODS FOR EXTINGUISHMENT AND CONTROL OF BURNING COAL REFUSE PILES. (FINAL REPORT).
12066 APTIC NO. 30057

ON A DUST-COLLECTING DEVICE FOR A FERROSILICON FURNACE.
12219 APTIC NO. 30086

THE SCRUBBING OF TAIL GAS FROM SULFURIC ACID PLANTS.
12067 APTIC NO. 30096

SUMMARY OF H2SO4 MANUFACTURE.
12068 APTIC NO. 30099

TFE-FLUOROCARBON FIBER FILTER BAGS--IT COSTS MORE TO GO FIRST CLASS.
12109 APTIC NO. 30121

GRAVITATIONAL AND DRY CENTRIFUGAL COLLECTORS AND AIR POLLUTION CONTROL.
12095 APTIC NO. 30123

INSTRUMENTS AND THEIR APPLICATIONS IN MASS SPECTROMETRY.
12261 APTIC NO. 29579

RESEARCH FACILITIES NECESSARY TO ADEQUATELY SUPPORT MEASUREMENT OF LOW LEVELS OF POLLUTANTS AND FOLLOW THEIR TRENDS.
12359 APTIC NO. 29050

SULFUR RECOVERY IN THE MANUFACTURE OF PIPELINE GAS FROM COAL.
12635 APTIC NO. 29143

AN SO2 REMOVAL AND RECOVERY PROCESS.
12630 APTIC NO. 29144

HOW EMISSION CONTROL AFFECTS MELTING COSTS.
12628 APTIC NO. 29879

ON EXAMPLE OF PRACTICAL APPLICATION OF DUST COLLECTOR FOR ELECTRIC FURNACE FOR FERRO-ALLOY.
12632 APTIC NO. 29892

THE COSTS FOR MAINTENANCE OF CLEAN AIR. THE INFLUENCE OF SOCIAL COSTS ON THE SELECTION OF AN INDUSTRIAL SITE.
12633 APTIC NO. 29923

THE ECONOMIC IMPORTANCE OF HEAT RECOVERY FROM HOUSEHOLD REFUSE INCINERATORS.
12625 APTIC NO. 29992

THE ECONOMIC IMPORTANCE OF POLLUTION CONTROL.
12626 APTIC NO. 30054

ON OUTLINE OF MACHINERY CREDIT INSURANCE AND ITS APPLICATION TO DUST COLLECTION EQUIPMENT.
12634 APTIC NO. 30087

VALUE ANALYSIS OF COAL.
12629 APTIC NO. 30122

FAST WRITE-OFF AND OTHER TAX RELIEF.
12627 APTIC NO. 30128

INDUSTRIAL REACTION TO SULPHUR DIOXIDE CONTROL EQUIPMENT AND STANDARDS.
12637 APTIC NO. 29604

A PHILOSOPHY OF INDUSTRIAL AIR POLLUTION CONTROL.
12666 APTIC NO. 29485

ON THE BASIC LAW FOR ENVIRONMENTAL POLLUTION CONTROL, NOISE CONTROL LAW, WATER POLLUTION PREVENTION LAW, AND AIR POLLUTION PREVENTION LAW.
12670 APTIC NO. 29509

NOBODY BREATHES FRESH AIR. FACTS AND ARGUMENTS ABOUT AIR POLLUTION.
12677 APTIC NO. 29459

COTTON

ELECTROSTATIC FIELD BREAKDOWN PHENOMENA IN APPLYING CHARGED PARTICLES.
12236 APTIC NO. 30006

CRACKING

SIMPLIFIED TECHNIQUES IN AIR POLLUTION MEASUREMENT.
12289 APTIC NO. 29771

ATMOSPHERIC REACTIONS AND SCAVENGING PROCESSES.
12426 APTIC NO. 29774

PHOTOCHEMICAL SMOG AND ITS REACTION MECHANISM.
12459 APTIC NO. 29934

CRANKCASE EMISSIONS

PROBLEMS OF AERATION OF THE CRANKCASE OF RECIPROCATING ENGINES WITH AN OTTO WORK CYCLE.
12009 APTIC NO. 29721

IT BEGAN WITH THE SMOG IN CALIFORNIA. CALIFORNIA TEST, EUROPEAN TEST--INTERNATIONAL REGULATIONS OF AUTOMOBILE EXHAUST GAS EMISSIONS.
12640 APTIC NO. 30069

CRITERIA

MARKET TENDENCIES FOR LEAD AND ZINC.
12003 APTIC NO. 30001

ENVIRONMENTAL POLLUTION CONTROL MEASURES IN WEST EUROPE AND PROBLEMS OF CARBIDE ELECTRIC FURNACE DUST IN JAPAN.
12073 APTIC NO. 29675

PERFORMANCE OF CHARCOAL-IMPREGNATED FILTER PAPER TYPE CP-20 FOR COLLECTING AIRBORNE RADIOIODINE.
12185 APTIC NO. 29870

OBSERVATIONS CONCERNING THE USE OF THE A.R.M. APPARATUS AND THE POSSIBILITIES OF UTILIZING THE RESULTS FOR PREVENTIVE MEASURES.
12291 APTIC NO. 29556

GENERAL REMARKS ABOUT DUST SAMPLING.
12321 APTIC NO. 29564

EXHAUST GAS EVALUATION BY AIR RATIO COEFFICIENTS.
12278 APTIC NO. 29638

POLLUTION TESTS ON IDLING GASOLINE MOTORS.
12251 APTIC NO. 29765

PIEZOLECTRIC-ELECTROSTATIC AEROSOL MASS CONCENTRATION MONITOR.
12331 APTIC NO. 30061

CHART FOR EVALUATION OF THE RISK OF SILICOSIS.
12542 APTIC NO. 29559

AIR POLLUTION.
12575 APTIC NO. 29949

CRITERIA OF INJURIOUSNESS AS THE BASIS OF STANDARDS OF THE HYGIENE OF THE AIR.
12642 APTIC NO. 29574

INDUSTRIAL REACTION TO SULPHUR DIOXIDE CONTROL EQUIPMENT AND STANDARDS.
12637 APTIC NO. 29604

ON THE BASIC LAW FOR ENVIRONMENTAL POLLUTION CONTROL, NOISE CONTROL LAW, WATER POLLUTION PREVENTION LAW, AND AIR POLLUTION PREVENTION LAW.
12670 APTIC NO. 29509

THE EVOLUTION OF AIR POLLUTION CONTROL LAWS.
12672 APTIC NO. 30020

COMPARATIVE STUDY OF CERTAIN PROVISIONS IN MEMBER STATES FOR CONTROLLING AIR POLLUTION.
12656 APTIC NO. 30052

ON SOME BASIC PROBLEMS OF THE PURIFICATION OF THE AIR.
12676 APTIC NO. 29591

CROP SPRAYING

MERCURY IN THE ENVIRONMENT.
11992 APTIC NO. 29489

MEASUREMENT OF ATMOSPHERIC LEVELS OF PESTICIDES.
12392 APTIC NO. 29812

CROPS

INVESTIGATION OF HEAVY METAL POLLUTION IN IWAKI CITY.
12007 APTIC NO. 29787

ELECTROSTATIC FIELD BREAKDOWN PHENOMENA IN APPLYING CHARGED PARTICLES.
12236 APTIC NO. 30006

PLANTS AND POLLUTED AIR.
12230 APTIC NO. 30083

FLAME PHOTOMETRIC DETECTION OF VOLATILE SULPHUR COMPOUNDS IN SMOKE FROM VARIOUS TYPES OF CIGARETTES.
12283 APTIC NO. 29874

PLANTS AND SOILS AS INDICATORS OF METALS IN THE AIR.
12281 APTIC NO. 30113

THE GAS CHROMATOGRAPHIC DETERMINATION OF PESTICIDES. (PART 3) DETERMINATION OF RESIDUES OF ORGANOPHOSPHORUS PESTICIDES.
12349 APTIC NO. 30134

ITAI-ITAI (OUCH-OUCH) DISEASE AND CADMIUM POLLUTION IN JAPAN.
12581 APTIC NO. 29673

EFFECT OF AIR AND WATER POLLUTION ON AGRICULTURAL PRODUCTS BY CD, PB, ZN ATTRIBUTED TO MINE REFINERY IN ANNAKA CITY, GUNMA PREFECTURE.
12601 APTIC NO. 27489

ON DAMAGE TO PLANTS BY FLUORIDES IN EXHAUST GAS FROM TILE MANUFACTURING FACTORY.
12606 APTIC NO. 29597

ON COMPOSITE HARM TO PLANTS BY SULFUROUS ACID GAS AND OXIDANT.
12604 APTIC NO. 29671

OZONE AND AIR IONS ACCOMPANYING BIOLOGICAL APPLICATIONS OF ELECTRIC FIELDS.
12594 APTIC NO. 29897

COLLECTED PHOTOGRAPHS DEMONSTRATING PLANT DAMAGE BY AIR POLLUTION.
12591 APTIC NO. 29924

ETHYLENE PRODUCTION FROM OZONE INJURED PLANTS.
12596 APTIC NO. 30059

CRYSTAL STRUCTURE

MANUFACTURING OF INDUSTRIAL CATALYST COMPRISING ALUMINA AS CARRIER. (Arumina o tantai to shita kogyo

shokubai no seizo). Text in Japanese. Preprint, Japan Industrial Technology Assoc., Tokyo, 12p., 1970. 5 refs. (Presented at the Industrial Catalyst Seminar Tokyo, Japan, Nov. 9, 1970.)
12158 APTIC NO. 29755

STUDIES ON LEAD CHROMATE OBTAINED FROM TETRAALKYL LEAD IN LEADED GASOLINE. I. X-RAY DIFFRACTION TESTS OF THE LEAD CHROMATE CRYSTALS.
12296 APTIC NO. 29810

SCAVENGING IN PERSPECTIVE.
12422 APTIC NO. 29688

SCAVENGING BY SNOW AND ICE CRYSTALS.
12456 APTIC NO. 29707

CONTINUOUS CHARGED CLOUD-PARTICLE SAMPLER.
12451 APTIC NO. 29712

PARTICLE AND DEUTERIUM CONTENT IN SNOW.
12449 APTIC NO. 29775

SPECTROSCOPIC STUDIES OF PORPHYRINS, PHTHALOCYANINES, AND CS2 IN INERT MATRICES.
12471 APTIC NO. 30050

CUMULATIVE METHODS

PROGRESS IN MEASUREMENT OF AIR POLLUTION.
12350 APTIC NO. 29748

SIMPLIFIED TECHNIQUES IN AIR POLLUTION MEASUREMENT.
12289 APTIC NO. 29771

STATISTICAL ANALYSES OF AIR POLLUTION SAMPLING FREQUENCY IN AN EPIDEMIOLOGIC STUDY.
12378 APTIC NO. 29655

A REPORT OF THE PERIODIC MEASUREMENT OF SOOT AND DUST, AND SULFUR OXIDES IN THE AIR AROUND THE HOSPITAL.
12381 APTIC NO. 29794

A STUDY OF AIR POLLUTION AROUND A SULPHURIC ACID PLANT.
12374 APTIC NO. 29883

ON AIR POLLUTION IN MIZUSHIMA AREA.
12390 APTIC NO. 29895

CUPOLAS

AIR POLLUTANTS GENERATED IN INTRA-FURNACE COMBUSTION.
12020 APTIC NO. 29532

OPERATING EXPERIENCE OF EVAPORATIVE COOLERS SERVING CUPOLAS AIR POLLUTION CONTROL SYSTEMS.
12034 APTIC NO. 30032

HEAT EXTRACTION AIDS DEPOLLUTION OF GASES AND WATER IN CHEVROLET FOUNDRY.
12097 APTIC NO. 29523

MITSUBISHI-RESEARCH DISC SCRUBBER.
12080 APTIC NO. 29536

THE NEW DUPLEX IRON MELTING PLANT AT THE M. BUSCH KG IN WEHRSTAPEL.
12094 APTIC NO. 29861

ANNUAL SURVEY ON CUPOLA FURNACES, SEQUENCE EIGHT.
12101 APTIC NO. 30101

POLLUTIONS AND TOKYO METROPOLITAN GOVERNMENT.
12365 APTIC NO. 29973

HOW EMISSION CONTROL AFFECTS MELTING COSTS.
12628 APTIC NO. 29879

CASTING WORK ENVIRONMENTS AND PUBLIC NUISANCE.
12655 APTIC NO. 29975

CYANIDES

INVESTIGATION OF HEAVY METAL POLLUTION IN IWAKI CITY.
12007 APTIC NO. 29787

SPECTROSCOPIC STUDIES OF PORPHYRINS, PHTHALOCYANINES, AND CS2 IN INERT MATRICES.
12471 APTIC NO. 30050

COLLECTION OF LEGISLATIONS RELATED WITH MITI CONCERNING POLLUTIONS.
12646 APTIC NO. 29504

CYCLONES (ATMOSPHERIC)

EXPERIMENTS WITH A REGIONAL FINE-MESH PREDICTION MODEL.
12465 APTIC NO. 30107

CZECHOSLOVAKIA

REMOVAL OF BROWN FUME FROM WASTE GASES OF OPEN HEARTH FURNACE OXYGEN STEELMAKING PROCESS.
12194 APTIC NO. 29945

POROUS ANALYTICAL FILTERS AND THEIR USE IN AIR HYGIENE.
12346 APTIC NO. 29784

PARALLEL DETERMINATION OF NICKEL AND COBALT IN URINE AND ATMOSPHERE.
12300 APTIC NO. 29953

QUANTITATIVE ALDEHYDE DETERMINATION IN THE AIR OF WORKING PLACES.
12317 APTIC NO. 30023

DISSIPATION AND PRECIPITATION OF DUST EMITTED BY A STEELWORKS.
12466 APTIC NO. 29829

DISSIPATION OF SO2 GENERATED IN A STEELWORK INTO THE GROUND LAYER OF THE ATMOSPHERE.
12467 APTIC NO. 29867

KINETICS OF THE REACTION BETWEEN THE SOLID SODIUM CARBONATE AND THE GASEOUS SULPHUR DIOXIDE. VI. STATISTICAL MOLECULAR MODEL OF THE EXCESS KINETIC FUNCTION.
12487 APTIC NO. 29702

ON HYGIENIC AND TOXICOLOGICAL PROBLEMS OF POLLUTION BY ARSENIC.
12534 APTIC NO. 29587

THE INFLUENCE OF AIR POLLUTION ON PUBLIC HEALTH.
12586 APTIC NO. 29589

THE STUDY OF THE POLLUTED AIR INFLUENCE ON CHILDREN S HEALTH IN RUHRDISTRICT.
12544 APTIC NO. 29899

OXIDATION STUDY ON ATMOSPHERIC AGING OF POLYMERS.
12622 APTIC NO. 29826

ATMOSPHERIC CORROSION OF THE ELECTROLYTIC NI-CR COATINGS.
12609 APTIC NO. 30039

STATE AND INSPECTION OF PROTECTION OF ATMOSPHERE AND LEGAL REGULATIONS VALID TODAY.
12664 APTIC NO. 29828

D

DATA ANALYSIS

ESTIMATION OF VARIANCE OF AIR SAMPLER DATA BASED ON REPLICATE SAMPLES.
12314 APTIC NO. 29642

INTERPRETATION OF RESULTS OF EXAMINATION OF AIR.
12386 APTIC NO. 29545

DISSIPATION OF SO2 GENERATED IN A STEELWORK INTO THE GROUND LAYER OF THE ATMOSPHERE.
12467 APTIC NO. 29867

BORDEAUX. STUDY OF ATMOSPHERIC POLLUTION IN THE BUILT-UP AREA.
12420 APTIC NO. 30109

LONG RANGE PLANNING IN AIR RESOURCE MANAGEMENT.
12657 APTIC NO. 30056

DATA HANDLING SYSTEMS

THE MEASUREMENT OF ATMOSPHERIC POLLUTION IN GERMANY.
12340 APTIC NO. 29066

ESTIMATION OF VARIANCE OF AIR SAMPLER DATA BASED ON REPLICATE SAMPLES.
12314 APTIC NO. 29642

A COMPUTERIZED METHOD FOR SIZE CHARACTERIZATION OF ATMOSPHERIC AEROSOLS BY THE SCANNING ELECTRON MICROSCOPE.
12266 APTIC NO. 30019

INTERPRETATION OF RESULTS OF EXAMINATION OF AIR.
12386 APTIC NO. 29545

REPORT FROM THE NETHERLANDS: MEASUREMENT GRID FOR AIR POLLUTION.
12364 APTIC NO. 29798

NEW EYE ON THE AIR.
12412 APTIC NO. 29644

AIR POLLUTION CONTROL SYSTEM (3).
12401 APTIC NO. 29795

DISSIPATION OF SO2 GENERATED IN A STEELWORK INTO THE GROUND LAYER OF THE ATMOSPHERE.
12467 APTIC NO. 29867

BORDEAUX. STUDY OF ATMOSPHERIC POLLUTION IN THE BUILT-UP AREA.
12420 APTIC NO. 30109

AIR POLLUTION BY TRACE METALS IN JAPAN.
12561 APTIC NO. 29816

SIGNAL PROCESSING TECHNIQUES FOR ESTIMATING PARAMETERS OF CERTAIN BIOLOGICAL MODELS.
12570 APTIC NO. 29997

CONTINUOUS MEASUREMENT SYSTEM OF ATMOSPHERIC POLLUTION AT THE MOUTH OF THE RHINE, NEAR ROTTERDAM.
12645 APTIC NO. 28696

LONG RANGE PLANNING IN AIR RESOURCE MANAGEMENT.
12657 APTIC NO. 30056

DECOMPOSITION

EXPERIMENTAL STUDY ON PLASTICS INCINERATION.
12017 APTIC NO. 29841

STUDY OF THE COMBUSTION OF PARTLY PRE-MIXED LAMINAR NATURAL GAS FLAMES.
12021 APTIC NO. 29948

BASIC RESEARCH ON SMOKE DESULFURIZATION BY LIME-METALS, 2ND REPORT - EFFECT OF METAL ADDITION ON CALCINATION OF LIME.
12153 APTIC NO. 29080

COMBUSTION OF WASTES CENTERING AROUND REMOVAL OF NOXIOUS GAS.
12077 APTIC NO. 29985

INFRARED SPECTROSCOPIC STUDY OF THE CATALYTIC OXIDATION OF CARBON MONOXIDE TO CARBON DIOXIDE ON MANGANESE DIOXIDE.
12105 APTIC NO. 30091

DISPOSAL OF HC FROM OIL CONTAINING RESIDUAL OIL AFTER DISTILLATION USING HYDROGEN.
12162 APTIC NO. 30095

A METER FOR THE SITE DETERMINATION OF HYDROLYSABLE FLUORIDES IN SULPHUR HEXAFLUORIDE.
12336 APTIC NO. 30007

NO-X CONTROL FROM STATIONARY SOURCES.
12427 APTIC NO. 29764

EXPLOSIVE OXIDATION OF NITROUS OXIDE MIXED WITH OZONE.
12511 APTIC NO. 27268

A FEW OBSERVATION ON THE GENERATION MECHANISM OF OBNOXIOUS ODOR.
12517 APTIC NO. 29649

METHANESULFENYL CHLORIDE. V. THE SPONTANEOUS DECOMPOSITION OF METHANESULFENYL CHLORIDE AND METHYLSULFUR TRICHLORIDE.
12485 APTIC NO. 29674

REDUCTION OF MAGNESIUM SULPHATE BY CARBON MONOXIDE.
12498 APTIC NO. 29943

DEGRADATION OF POLYMERS IN REACTIVE GASES.
12617 APTIC NO. 29472

DENSITY

HEAVY METAL POLLUTION IN THE ONAHAMA INDUSTRIAL AREA. 1ST REPORT. DISTRIBUTION OF HEAVY METALS IN SOIL.
12006 APTIC NO. 29539

PROBLEMS OF PUBLIC NUISANCE CAUSED BY BAD ODORS IN HYOGO PREFECTURE.
12029 APTIC NO. 29599

PARTICLE CAPTURE MECHANISMS IN FIBROUS FILTERS.
12214 APTIC NO. 29324

STUDY ON MECHANISM OF REACTION WITH SULFUR DIOXIDE OF LIMESTONE POWDER BLOWN INTO COMBUSTION GAS.
12146 APTIC NO. 29479

ON CONDITIONS FOR PROPER USE OF ACTIVATED CARBON AS AN AIR PURIFICATION AGENT (2) - ITS EFFICIENCY FOR REMOVAL OF SO2 GAS.
12113 APTIC NO. 29496

METHOD TO REMOVE HARMFUL SUBSTANCES FROM STACK GAS BY-PRODUCING AMMONIUM SULFATE AND OTHERS (XV) - ACTIVATION ENERGY OF ACTIVATED CARBON FOR SO2 ADSORPTION.
12161 APTIC NO. 29648

DEVELOPMENT OF A NEW DUST COLLECTOR.
12056 APTIC NO. 29686

ABSORPTION OF SULFUROUS ACID GAS BY WATER SOLUTION OF POTASSIUM PHOSPHATE.
12172 APTIC NO. 29731

ON REGENERATION OF ACTIVATED CARBON HAVING ADSORBED SO2.
12173 APTIC NO. 29732

REPORT ON THE INVESTIGATION INTO THE MAINTENANCE AND THE SUPERVISION OF AIR-CLEANING APPARATUS AS AN INDICATION OF AIR POLLUTION.
12122 APTIC NO. 29840

EXPERIMENTAL RESEARCH ON LOW EXCESS AIR COMBUSTION IN BOILER BURNING HEAVY OIL ONLY.
12142 APTIC NO. 29860

EFFECTS OF WATER INJECTION IN INLET TUBE ON NO CONCENTRATION IN DIESEL EXHAUST.
12220 APTIC NO. 29911

INVESTIGATION OF HEAVY OIL DESULFURIZATION IN FIXED-BED CONTACT REACTORS.
12196 APTIC NO. 29931

CONTACT HYDRODESULFURIZATION OF PETROLEUM RESIDUAL OIL.
12200 APTIC NO. 29932

ADSORPTIVITY OF DESULFURIZING ACTIVATED CARBON FOR SULFUROUS ACID GAS (1). PERFORMANCE VARIATION OF ACTIVATED CARBON IN PILOT PLANT.
12206 APTIC NO. 29939

METHOD TO ARREST AND REMOVE WHITE SMOKE PRODUCED FROM MOLTEN ZINC PLATING PROCESS.
12135 APTIC NO. 29940

REACTOR DEVICE FOR HEAVY OIL DESULFURIZATION.
12149 APTIC NO. 29987

EXPERIMENTAL INVESTIGATION OF THE PROCESS OF CENTRIFUGAL DUST SEPARATION.
12245 APTIC NO. 30133

QUANTITATIVE ANALYSIS OF NO IN ATMOSPHERE - ON CHANGES IN SALTZMAN COEFFICIENT WITH CHANGE IN COMPOSITION OF SALTZMAN REAGENTS.
12308 APTIC NO. 29480

TRIAL CONSTRUCTION OF NON-DISPERSION TYPE VISIBLE LIGHT GAS ANALYZE AND DETERMINATION OF NITROGEN DIOXIDE, CHLORINE, AND BROMINE.
12303 APTIC NO. 29762

POROUS ANALYTICAL FILTERS AND THEIR USE IN AIR HYGIENE.
12346 APTIC NO. 29784

PIEZOLECTRIC-ELECTROSTATIC AEROSOL MASS CONCENTRATION MONITOR.
12331 APTIC NO. 30061

A MATHEMATICAL MODEL FOR MEASURING MASS/NUMBER INDEX OF RESPIRABLE AIRBORNE COAL DUST.
12258 APTIC NO. 30081

TENTATIVE METHOD OF ANALYSIS FOR DUSTFALL FROM THE ATMOSPHERE.
12344 APTIC NO. 30119

MICROSTRUCTURE OF ATMOSPHERIC SURFACE LAYER AEROSOLS.
12433 APTIC NO. 29668

CONTINUOUS CHARGED CLOUD-PARTICLE SAMPLER.
12451 APTIC NO. 29712

PARTICLE AND DEUTERIUM CONTENT IN SNOW.
12449 APTIC NO. 29775

THERMODYNAMICS OF THE AEROSOLS IN THE ATMOSPHERE.
12428 APTIC NO. 29785

ON PLUMBIC POLLUTION OF MUNICIPAL ATMOSPHERE--BEHAVIORS OF PLUMBIC COMPOUND AS AEROSOL.
12431 APTIC NO. 30073

SOME OBSERVATIONS ON THE ABNORMAL AGGLOMERATION OF CARBON BLACK AND OF GRAPHITE POWDER.
12506 APTIC NO. 29548

THE REACTION OF OZONE WITH SOLID POLYSTYRENE.
12505 APTIC NO. 29666

DEPOSITION OF LIQUID OR SOLID DISPERSIONS FROM TURBULENT GAS STREAMS: A STOCHASTIC MODEL.
12494 APTIC NO. 29873

REDUCTION OF MAGNESIUM SULPHATE BY CARBON MONOXIDE.
12498 APTIC NO. 29943

ADHESION TO PIPE S WALL WITH AEROSOL PARTICLES FLOWING IN A PIPE AS TURBULENT FLOW.
12523 APTIC NO. 30071

SHAPE FACTORS FOR AIRBORNE PARTICLES.
12503 APTIC NO. 30085

GENERATION AND MEASUREMNT OF AIR IONS FOR MEDICAL APPLICATIONS AND THER INFLUENCE ON REACTION TIME AND MONOSYNAPTIC REFLEX OF MAN.
12547 APTIC NO. 29267

DEPOSITION

AIR POLLUTION BY LEAD AND ZINC IN THE AREA OF COMBINED METALLURGICA WORKS AND ITS INFLUENCE ON VEGETATION AND SOIL.
12031 APTIC NO. 29572

WHY LEAD IN GASOLINE? THE EFFECT OF LEAD CONTAINING ANTIKNOCK AGENTS FOR OTTO ENGINE FUELS.
11995 APTIC NO. 29782

DIRECT DESULFURIZATION OF HEAVY OIL.
12111 APTIC NO. 29908

DESULFURIZATION OF EXHAUST GAS.
12078 APTIC NO. 29927

CONTACT HYDRODESULFURIZATION OF PETROLEUM RESIDUAL OIL.
12200 APTIC NO. 29932

HYDRODESULFURIZATION OF HEAVY QUALITY OIL, RESIDUAL OIL, ETC. (Jushitsuyu, zansayu to no suisokadatsuryuho). Text in Japanese. (Ishikawajima-Harima Heavy Industries (Japan)) Japan. Pat. Sho 46-819. 3p.,

Jan. 9, 1971. (Appl. Dec. 25, 1967, claims not given).

12218 APTIC NO. 29933

STUDIES ON AIR POLLUTION CONTROL BY ADDITIVE INJECTION. PART II - PREVENTION OF CLOGGING AT HIGH TEMPERATURE HEATING SURFACE OF BOILER BY ADDING MG(OH)2 POWDER.

12075 APTIC NO. 29941

CAN ADDITIVES DECREASE DIESEL SMOKE? Power, 114(8):60, Aug. 1970.

12075 APTIC NO. 29941

ELECTROSTATIC FIELD BREAKDOWN PHENOMENA IN APPLYING CHARGED PARTICLES.

12236 APTIC NO. 30006

ON DOUBLE HEAD-CUT CONES TYPE CENTRIFUGAL DUST COLLECTOR.

12148 APTIC NO. 30070

POLLUTIONS AND TOKYO METROPOLITAN GOVERNMENT.

12365 APTIC NO. 29973

THE CURRENT STATUS OF DEPOSITION RESEARCH.

12447 APTIC NO. 29583

ON THE DEPOSITION OF MATTER ON SPHERICAL AEROSOL PARTICLES IN THE RANGE OF INTERMEDIATE KNUDSEN NUMBERS.

12405 APTIC NO. 29667

ATMOSPHERIC DISPERSION OF STACK EFFLUENTS.

12458 APTIC NO. 29773

ATMOSPHERIC REACTIONS AND SCAVENGING PROCESSES.

12426 APTIC NO. 29774

ATTACHMENT OF TRACE SUBSTANCES ON ATMOSPHERIC AEROSOLS.

12409 APTIC NO. 30046

THE REACTION OF OZONE WITH SOLID POLYSTYRENE.

12505 APTIC NO. 29666

DEPOSITION OF LIQUID OR SOLID DISPERSIONS FROM TURBULENT GAS STREAMS: A STOCHASTIC MODEL.

12494 APTIC NO. 29873

ADHESION TO PIPE S WALL WITH AEROSOL PARTICLES FLOWING IN A PIPE AS TURBULENT FLOW.

12523 APTIC NO. 30071

ON HYGIENIC AND TOXICOLOGICAL PROBLEMS OF POLLUTION BY ARSENIC.

12534 APTIC NO. 29587

ADDITION OF LEAD TO FUEL - HARMFUL OR DANGEROUS? (Bleizusaetze im Kraftstoff - harmlos oder gefaehrlich)? Text in German. VDI (Ver. Deut. Ingr.) Nachr. (Berlin), 25(9):6, 1971.

12527 APTIC NO. 30080

COMPLEX ALKALI IRON SULFATES A CONTRIBUTION TO THE THERMODYNAMICS OF FIRESDIDE HIGH-TEMPERATURE CORROSION.

12616 APTIC NO. 29783

DESULFURIZATION OF FUELS

OIL REFINERS PREPARE FOR ANIT-POLLUTION CONTROLS.

12040 APTIC NO. 29127

GULF RESIDUAL OIL HDS PROCESS.

12136 APTIC NO. 29501

OUTLOOK OF ENVIRONMENTAL POLLUTION AND ITS PREVENTION TECHNOLOGY.

12124 APTIC NO. 29600

PREVENTION OF AIR POLLUTION ON IRON FOUNDRY.

12178 APTIC NO. 29602

HYDROGENIZATION DESULFURIZATION METHOD OF HEAVY HC.

12189 APTIC NO. 29603

DESULFURIZATION OF LIQUEFIED PROPANE GAS. MOLECULAR SIEVE PROCESS.

12053 APTIC NO. 29617

COUNTERMEASURES ON PREVENTION OF INDUSTRIAL POLLUTIONS--PART II ON SULFURIC ACID GAS.

12210 APTIC NO. 29646

ASPHALTENE HYDRODESULFURIZATION WITH SMALL CATALYST PARTICLES DISPOSED IN A GUARD CHAMBER-MAIN REACTOR SYSTEM.

12121 APTIC NO. 29719

DESULFURIZATION.

12242 APTIC NO. 29742

H-OIL AS A TOOL FOR LOW SULFUR FUEL PRODUCTION.

12126 APTIC NO. 29808

DIRECT DESULFURIZATION OF HEAVY OIL.

12111 APTIC NO. 29908

ESSO/UNION FUEL OIL HYDRODESULFURIZATION PROCESSES. PART II: COMMERCIAL EXPERIENCE WITH GO-FINING.

12096 APTIC NO. 29926

INVESTIGATION OF HEAVY OIL DESULFURIZATION IN FIXED-BED CONTACT REACTORS.

12196 APTIC NO. 29931

CONTACT HYDRODESULFURIZATION OF PETROLEUM RESIDUAL OIL.

12200 APTIC NO. 29932

HYDRODESULFURIZATION OF HEAVY QUALITY OIL, RESIDUAL OIL, ETC.. (Jushitsuyu, zansayu to no suisokadatsuryuho). Text in Japanese. (Ishikawajima-Harima Heavy Industries (Japan)) Japan. Pat. Sho 46-819. 3p., Jan. 9, 1971. (Appl. Dec. 25, 1967, claims not given).

12218 APTIC NO. 29933

ESSO/UNION FUEL OIL HYDRODESULFURIZATION PROCESSES. PART I: PROCESS APPLICATIONS AND DEVELOPMENT.

12180 APTIC NO. 29954

DESULFURIZATION OF WASTE GASES AND FUELS.

12205 APTIC NO. 29957

METHOD TO MANUFACTURE CATALYST FOR DESULFURIZATION BY HYDROGEN ADDITION OF LIQUID HYDROCARBON.

12234 APTIC NO. 29974

CATALYST FOR HEAVY OIL DESULFURIZATION.

12224 APTIC NO. 29977

REACTOR DEVICE FOR HEAVY OIL DESULFURIZATION.

12149 APTIC NO. 29987

STUDY ON THE DIRECT DESULFURIZATION OF HEAVY OIL.

12159 APTIC NO. 29989

REDUCING SO2 EMISSION FROM STATIONARY SOURCES.

12098 APTIC NO. 30102

AIR POLLUTION DERIVING FROM HEATING PLANTS AND INDUSTRIAL PROCESSES AND ITS CONTROL.

12229 APTIC NO. 30106

SULFUR RECOVERY IN THE MANUFACTURE OF PIPELINE GAS FROM COAL.

12635 APTIC NO. 29143

UNLEADED GASOLINE AND SMOG-FREE AUTOS--HOW AND WHY.

12644 APTIC NO. 30035

DIAGNOSES

AIR POLLUTION.

12324 APTIC NO. 29858

RAPID ASSESSMENT OF TESTS OF POLLUTANT EFFECTS IN MAN.

12536 APTIC NO. 29431

PATHOLOGICAL STUDY ON THE EXPERIMENTAL RABBITS AT AIR-POLLUTED AREA IN YOKKAICHI.

12590 APTIC NO. 29502

INTRODUCTION AND GENERAL DESCRIPTION OF THE STUDY AND OF THE PROCEDURES FOR PROLONGED EXPOSURE TO CARBON MONOXIDE AND HYPOXIA.

12530 APTIC NO. 29503

ITAI-ITAI (OUCH-OUCH) DISEASE AND CADMIUM POLLUTION IN JAPAN.

12581 APTIC NO. 29673

THE RESEARCH FOR THE EFFECTS OF AIR POLLUTION ON THE HUMAN BODY. (II) THE RELATIONSHIP BETWEEN ASTHMA-LIKE DISEASES OF THE SCHOOL CHILDREN AND AIR POLLUTION IN KITAKYUSHU.

12524 APTIC NO. 29683

EFFECTS OF SOOT AND SMOKE ON THE HEALTH OF SCHOOL CHILDREN.

12556 APTIC NO. 29791

THE STUDY OF THE POLLUTED AIR INFLUENCE ON CHILDREN S HEALTH IN RUHRDISTRICT.

12544 APTIC NO. 29899

STUDY ON THE EFFECTS OF AIR POLLUTION ON HUMAN BODY--WITH SPECIAL REFERENCE TO OBJECTIVE, COMPARATIVE STUDY OF ALL THE INHABITANTS BY CHEST X-RAY RINDINGS.

12554 APTIC NO. 29904

SOME HEALTH SURVEY RESULTS OF UNDERGROUND GARAGE WORKERS.

12568 APTIC NO. 30074

MATERIALS FOR REFERENCE ABOUT ENVIRONMENTAL POLLUTION CONTROL.

12651 APTIC NO. 29818

DIESEL ENGINES

NITROGEN OXIDES ANALYSIS.

12042 APTIC NO. 29538

PHYSICAL-CHEMICAL PROBLEMS OF AIR POLLUTION.

11996 APTIC NO. 29786

AN EXPERIMENTAL STUDY ON THE PERFORMANCE OF A MULTIFUEL ENGINE. PART 3. AN ATTEMPT OF M-COMBUSTION APPLIED TO A SWIRL CHAMBER.

12183 APTIC NO. 29520

EXHAUST GAS CLEANER FOR DIESEL ENGINES.

12221 APTIC NO. 29533

EFFECTS OF THE ADDITION OF BARIUM COMPOUND ON THE SMOKE CONCENTRATION OF DIESEL EXHAUST GAS.

12057 APTIC NO. 29696

STUDY ON AUTO EXHAUST.

12241 APTIC NO. 29909

EFFECTS OF WATER INJECTION IN INLET TUBE ON NO CONCENTRATION IN DIESEL EXHAUST.
12220 APTIC NO. 29911

CAN ADDITIVES DECREASE DIESEL SMOKE? Power, 114(8):60, Aug. 1970.
12554 APTIC NO. 29904

WASTE GAS RECIRCULATION IN COMBUSTION ENGINES, PRIMARILY DIESEL ENGINES.
12181 APTIC NO. 29962

FIRST RESULTS WITH THE M.A.N.-EXPERIMENTAL GAS TURBINE FOR COMMERCIAL VEHICLES.
12131 APTIC NO. 30088

QUANTITATIVE ALDEHYDE DETERMINATION IN THE AIR OF WORKING PLACES.
12317 APTIC NO. 30023

DIFFRACTION

METHOD TO ARREST AND REMOVE WHITE SMOKE PRODUCED FROM MOLTEN ZINC PLATING PROCESS.
12135 APTIC NO. 29940

THEORETICAL CONSIDERATION IN THE MEASUREMENT OF SMOKE PARTICLES BY OWL (II) - EFFECT OF DISPERSION.
12298 APTIC NO. 29483

COMPARISON OF VARIOUS METHODS OF DETERMINING QUARTZ CONTENT IN NOXIOUS DUST.
12263 APTIC NO. 29546

RESULTS OF COMPARATIVE TESTS ON QUARTZ CONTENT OBTAINED FROM LABORATORIES USING VARIOUS TECHNIQUES OF DETERMINATION.
12327 APTIC NO. 29552

STUDIES ON LEAD CHROMATE OBTAINED FROM TETRAALKYL LEAD IN LEADED GASOLINE. I. X-RAY DIFFRACTION TESTS OF THE LEAD CHROMATE CRYSTALS.
12296 APTIC NO. 29810

DIFFUSION

THE PHYSIOLOGY OF CARBON MONOXIDE PRODUCTION BY DEEP-SEA COELENTERATES: CAUSES AND CONSEQUENCES.
12032 APTIC NO. 27292

PARTICLE CAPTURE MECHANISMS IN FIBROUS FILTERS.
12214 APTIC NO. 29324

STUDY ON MECHANISM OF REACTION WITH SULFUR DIOXIDE OF LIMESTONE POWDER BLOWN INTO COMBUSTION GAS.
12146 APTIC NO. 29479

ADSORPTION OF SULFUR DIOXIDE GAS BY ACTIVATED CARBON OR MOLECULAR SIEVE.
12201 APTIC NO. 29497

OUTLOOK OF ENVIRONMENTAL POLLUTION AND ITS PREVENTION TECHNOLOGY.
12124 APTIC NO. 29600

RECORDING DEVICE COMBINED WITH THERMAL PRECIPITATOR FOR MEASURING DUST CONTENT IN AIR.
12285 APTIC NO. 29540

PHOTON DETECTION OF LIGHT DIFFUSION WITH ULTRAFINE AEROSOLS.
12351 APTIC NO. 30038

GASEOUS PLUME DIFFUSION ABOUT ISOLATED STRUCTURES OF SIMPLE GEOMETRY. (ANNUAL PROGRESS REPORT).
12438 APTIC NO. 29584

NEW EYE ON THE AIR.
12412 APTIC NO. 29644

SCAVENGING IN PERSPECTIVE.
12422 APTIC NO. 29688

EVALUATION TRIALS OF URBAN AIR POLLUTION MODELS.
12439 APTIC NO. 29697

THERMAL-DIFFUSION CHAMBERS AS CLOUD-NUCLEI COUNTERS.
12452 APTIC NO. 29714

ATMOSPHERIC DISPERSION OF STACK EFFLUENTS.
12458 APTIC NO. 29773

ATMOSPHERIC REACTIONS AND SCAVENGING PROCESSES.
12426 APTIC NO. 29774

AIR POLLUTION CONTROL SYSTEM (3).
12401 APTIC NO. 29795

ESTIMATION OF GROUND LEVEL CONCENTRATION BY SMOKE-DIFFUSION WIND TUNNELS.
12462 APTIC NO. 29820

TURBULENT DIFFUSION THEORY TAKING TURBULENT BOUNDARY LAYER INTO CONSIDERATION.
12463 APTIC NO. 29822

ON THE DIFFUSION OF AUTO-EXHAUSTED GASES.
12464 APTIC NO. 29850

A METHOD FOR OPTIMIZING POLLUTANT EMISSIONS IN AN AIRSHED.
12448 APTIC NO. 29903

THE STUDY OF THE EVOLUTION OF ATOMIC SIZED PARTICLES IN THE AIR.
12436 APTIC NO. 29946

A NUMERICAL EXPERIMENT IN SIMULATING THE TRANSPORT OF SULFUR DIOXIDE THROUGH THE ATMOSPHERE.
12446 APTIC NO. 29952

ON PLUMBIC POLLUTION OF MUNICIPAL ATMOSPHERE--BEHAVIORS OF PLUMBIC COMPOUND AS AEROSOL.
12431 APTIC NO. 30073

ADHESION TO PIPE S WALL WITH AEROSOL PARTICLES FLOWING IN A PIPE AS TURBULENT FLOW.
12523 APTIC NO. 30071

ON DAMAGE TO PLANTS BY FLUORIDES IN EXHAUST GAS FROM TILE MANUFACTURING FACTORY.
12606 APTIC NO. 29597

STANDARDS OF AIR POLLUTION.
12643 APTIC NO. 29776

LONG RANGE PLANNING IN AIR RESOURCE MANAGEMENT.
12657 APTIC NO. 30056

NOBODY BREATHES FRESH AIR. FACTS AND ARGUMENTS ABOUT AIR POLLUTION.
12677 APTIC NO. 29459

DIFFUSION MODELS

OUTLOOK OF ENVIRONMENTAL POLLUTION AND ITS PREVENTION TECHNOLOGY.
12124 APTIC NO. 29600

PHOTON DETECTION OF LIGHT DIFFUSION WITH ULTRAFINE AEROSOLS.
12351 APTIC NO. 30038

NEW EYE ON THE AIR.
12412 APTIC NO. 29644

EVALUATION TRIALS OF URBAN AIR POLLUTION MODELS.
12439 APTIC NO. 29697

ATMOSPHERIC DISPERSION OF STACK EFFLUENTS.
12458 APTIC NO. 29773

ESTIMATION OF GROUND LEVEL CONCENTRATION BY SMOKE-DIFFUSION WIND TUNNELS.
12462 APTIC NO. 29820

TURBULENT DIFFUSION THEORY TAKING TURBULENT BOUNDARY LAYER INTO CONSIDERATION.
12463 APTIC NO. 29822

A METHOD FOR OPTIMIZING POLLUTANT EMISSIONS IN AN AIRSHED.
12448 APTIC NO. 29903

STANDARDS OF AIR POLLUTION.
12643 APTIC NO. 29776

LONG RANGE PLANNING IN AIR RESOURCE MANAGEMENT.
12657 APTIC NO. 30056

DIGESTIVE SYSTEM

PATHOLOGICAL STUDY ON THE EXPERIMENTAL RABBITS AT AIR-POLLUTED AREA IN YOKKAICHI.
12590 APTIC NO. 29502

ON THE PROBLEM OF THE COMBINED EFFECTS OF SULFUR DIOXIDE AND BENZPYRENE ON THE ORGANISMS OF TEST ANIMALS.
12583 APTIC NO. 29585

ON HYGIENIC AND TOXICOLOGICAL PROBLEMS OF POLLUTION BY ARSENIC.
12534 APTIC NO. 29587

EXPERIMENTAL STUDIES ON THE EFFECT OF SMALL DOSES OF LEAD AND SULFUR DIOXIDE.
12532 APTIC NO. 29588

RESEARCH ON THE LEAD INTOXICATION OF THE GALLINACEANS.
12597 APTIC NO. 30033

DIOLEFINS

QUALITATIVE ANALYSIS OF EXHAUST GAS FROM FISH MEAL PLANT.
12028 APTIC NO. 29662

DIPHENYLS

A NEW ENVIRONMENTAL POLLUTANT - POLYCHLORINATED BIPHENYLS (PCB).
12044 APTIC NO. 29984

DISCOLORATION

THE INFLUENCE OF AIR POLLUTION UPON THE DISCOLORATION OF THE DYED STUFF AND THE DECREASE OF TENSILE STRENGTH OF SOME FIBERS.
12612 APTIC NO. 29717

DISPERSIONS

MODERN OIL BURNING TECHNOLOGY AS DISPLAYED ON THE INTHERM IN STUTTGART AND THE 6.ISH IN FRANKFURT 1971.
12187 APTIC NO. 29824

CONTACT HYDRODESULFURIZATION OF PETROLEUM RESIDUAL OIL.
12200 APTIC NO. 29932

DEPOSITION OF LIQUID OR SOLID DISPERSIONS FROM TURBULENT GAS STREAMS: A STOCHASTIC MODEL.
12494 APTIC NO. 29873

DISSIPATION RATES

DISSIPATION AND PRECIPITATION OF DUST EMITTED BY A STEELWORKS.
12466 APTIC NO. 29829

DISSOCIATION

KINETICS AND MECHANISMS OF THE VIBRATIONAL RELAXATION OF NOX2PI(V EQUALS 1) IN THE TEMPERATURE RANGE 100-433 K.
12474 APTIC NO. 29881

DISTILLATE OILS

COMBUSTION OF WASTE OIL FROM COAL.
12043 APTIC NO. 29534

GULF RESIDUAL OIL HDS PROCESS.
12136 APTIC NO. 29501

H-OIL AS A TOOL FOR LOW SULFUR FUEL PRODUCTION.
12126 APTIC NO. 29808

DIURNAL

LEAD POLLUTION AND PHOTOCHEMICAL SMOG IN TOKYO.
12376 APTIC NO. 29647

REGISTRATION OF THE SULPHUR DIOXIDE CONTENT OF THE AIR IN BUDAPEST.
12394 APTIC NO. 29868

DISTRIBUTION OF LEAD IN THE AIR NEAR CITY ROADS.
12388 APTIC NO. 29918

POLLUTIONS AND TOKYO METROPOLITAN GOVERNMENT.
12365 APTIC NO. 29973

EVOLUTION OF THE ATMOSPHERIC CONTAMINATION IN MADRID IN 1969.
12371 APTIC NO. 30089

DISTRIBUTION OF POLLUTION AT SOME COUNTRY SITES.
12425 APTIC NO. 29582

EVALUATION TRIALS OF URBAN AIR POLLUTION MODELS.
12439 APTIC NO. 29697

ON PLUMBIC POLLUTION OF MUNICIPAL ATMOSPHERE--BEHAVIORS OF PLUMBIC COMPOUND AS AEROSOL.
12431 APTIC NO. 30073

THE RESEARCH FOR THE EFFECTS OF AIR POLLUTION ON THE HUMAN BODY. (II) THE RELATIONSHIP BETWEEN ASTHMA-LIKE DISEASES OF THE SCHOOL CHILDREN AND AIR POLLUTION IN KITAKYUSHU.
12524 APTIC NO. 29683

ATMOSPHERIC CORROSION OF THE ELECTROLYTIC NI-CR COATINGS.
12609 APTIC NO. 30039

LONG RANGE PLANNING IN AIR RESOURCE MANAGEMENT.
12657 APTIC NO. 30056

DOMESTIC HEATING

MARKET DEVELOPMENT IN GAS ECONOMY.
12010 APTIC NO. 29781

THE REMOTE HEATING PLANT IN RECKLINGHAUSEN--A CONTRIBUTION TO THE PROTECTION OF THE ENVIRONMENT.
11990 APTIC NO. 29914

CONTROL OF OIL-FIRED HEATERS, A MODERN COMMUNAL TASK.
12015 APTIC NO. 30100

AIR POLLUTION DERIVING FROM HEATING PLANTS AND INDUSTRIAL PROCESSES AND ITS CONTROL.
12229 APTIC NO. 30106

LOW POWER HOUSEHOLD OIL BURNING INSTALLATIONS. HOW THEY FUNCTION, PROPOSAL FOR A METHOD OF REGULATING THEM.
12079 APTIC NO. 30108

THE 3,4-BENZPYRENE CONTENT OF THE AIR IN TWO INDUSTRIAL AREAS.
12400 APTIC NO. 29586

TEN YEARS OF AIR POLLUTION IN HOKKAIDO.
12367 APTIC NO. 29727

POLLUTIONS AND TOKYO METROPOLITAN GOVERNMENT.
12365 APTIC NO. 29973

THE ECONOMIC IMPORTANCE OF HEAT RECOVERY FROM HOUSEHOLD REFUSE INCINERATORS.
12625 APTIC NO. 29992

CHANGE IN POLLUTANTS AND FUTURE PROBLEMS.
12680 APTIC NO. 29743

DONORA

AIR POLLUTION--THE STATUS TODAY.
12681 APTIC NO. 28923

DROPLETS

THE INFLUENCE OF ENVIRONMENTAL PROTECTION ON PLANNING, OPERATION AND ECONOMY OF STEAM POWER PLANTS. I. MAINTENANCE OF CLEAN AIR.
12036 APTIC NO. 29519

EXHAUST GAS CLEANER FOR DIESEL ENGINES.
12221 APTIC NO. 29533

MODERN OIL BURNING TECHNOLOGY AS DISPLAYED ON THE INTHERM IN STUTTGART AND THE 6.ISH IN FRANKFURT 1971.
12187 APTIC NO. 29824

ATMOSPHERIC POLLUTION AT MODERN COKE WORKS.
12380 APTIC NO. 29257

COLLECTION EFFICIENCY OF WATER DROPLETS IN AGCL AEROSOL.
12430 APTIC NO. 29687

SCAVENGING IN PERSPECTIVE.
12422 APTIC NO. 29688

COLLECTION EFFICIENCIES OF RAINDROPS FOR SUBMICRON PARTICULATES.
12404 APTIC NO. 29709

SCAVENGING OF AEROSOL PARTICLES BY SPRAYS.
12437 APTIC NO. 29711

CONTINUOUS CHARGED CLOUD-PARTICLE SAMPLER.
12451 APTIC NO. 29712

EFFECT OF SOLUBILITIES OF GASES ON THEIR SCAVENGING BY RAINDROPS.
12442 APTIC NO. 29780

CHEMICAL PROCESSES AT THE AIR-SEA INTERFACE: THE BEHAVIOR OF FLUORINE.
12468 APTIC NO. 30126

PROGRESS REVIEW NO. 62: COMBUSTION OF SINGLE DROPLETS AND SIMPLIFIED SPRAY SYSTEMS.
12493 APTIC NO. 29803

CHARGES ON DROPLETS PRODUCED BY ATOMIZATION OF SOLUTIONS.
12482 APTIC NO. 29919

DRUGS

ITAI-ITAI (OUCH-OUCH) DISEASE AND CADMIUM POLLUTION IN JAPAN.
12581 APTIC NO. 29673

PATIENT ADVICE DURING ACUTE AIR POLLUTION EPISODE.
12531 APTIC NO. 29878

THE ROLE OF AIR POLLUTION ON CHRONIC OBSTRUCTIVE PULMONARY DISEASE.
12539 APTIC NO. 30136

CAN ANYTHING BE DONE FOR EMPHYSEMA? J. Louisiana State Med. Soc., 122(7):216-218, July 1970. 18 refs.
12579 APTIC NO. 30137

PROBLEMS OF PUBLIC NUISANCE CAUSED BY BAD ODORS IN HYOGO PREFECTURE.
12029 APTIC NO. 29599

MARKET DEVELOPMENT IN GAS ECONOMY.
12010 APTIC NO. 29781

A NEW ENVIRONMENTAL POLLUTANT - POLYCHLORINATED BIPHENYLS (PCB).
12044 APTIC NO. 29984

METHOD TO MANUFACTURE CATALYST FOR DESULFURIZATION BY HYDROGEN ADDITION OF LIQUID HYDROCARBON.
12234 APTIC NO. 29974

SULFURIC ACID, SO2 DEVELOPMENTS: REMOVING SO2 AND ACID MIST WITH VENTURI SCRUBBERS.
12209 APTIC NO. 30080

DUMPS

RECENT TREND AND PROBLEMS OF INDUSTRIAL WASTES TREATING EQUIPMENT.
12041 APTIC NO. 29827

DUST FALL

AIR POLLUTION BY LEAD AND ZINC IN THE AREA OF COMBINED METALLURGICA WORKS AND ITS INFLUENCE ON VEGETATION AND SOIL.
12031 APTIC NO. 29572

THE EMISSION AND IMMISSION CONDITIONS OF THE POWER PLANTS IN THE BOEHLENER AREA.
12045 APTIC NO. 30072

TENTATIVE METHOD OF ANALYSIS FOR DUSTFALL FROM THE ATMOSPHERE.
12344 APTIC NO. 30119

A STUDY ON THE ESTIMATION OF THE REGIONAL CENTRAL VALUE OF AIR POLLUTION FROM OBSERVED VALUES.
12383 APTIC NO. 29518

TEN YEARS OF AIR POLLUTION IN HOKKAIDO.
12367 APTIC NO. 29727

A REPORT OF THE PERIODIC MEASUREMENT OF SOOT AND DUST, AND SULFUR OXIDES IN THE AIR AROUND THE HOSPITAL.
12381 APTIC NO. 29794

ON AIR POLLUTION IN MIZUSHIMA AREA.
12390 APTIC NO. 29895

CONCASTER, AN AREA STUDY.
12366 APTIC NO. 30047

THE TENDENCY OF AIR POLLUTION AT NAGOYA CITY OBSERVED FROM THE WEIGHT OF FALLING DUST.
12396 APTIC NO. 30076

DISSIPATION AND PRECIPITATION OF DUST EMITTED BY A STEELWORKS.
12466 APTIC NO. 29829

THE RESEARCH FOR THE EFFECTS OF AIR POLLUTION ON THE HUMAN BODY. (II) THE RELATIONSHIP BETWEEN ASTHMA-LIKE DISEASES OF THE SCHOOL CHILDREN AND AIR POLLUTION IN KITAKYUSHU.
12524 APTIC NO. 29683

DUSTS

THE INDUSTRIAL FIRING SYSTEMS OF THE 1970'S.
12025 APTIC NO. 28968

THE INFLUENCE OF ENVIRONMENTAL PROTECTION ON PLANNING, OPERATION AND ECONOMY OF STEAM POWER PLANTS. I. MAINTENANCE OF CLEAN AIR.
12036 APTIC NO. 29519

AIR POLLUTANTS GENERATED IN INTRA-FURNACE COMBUSTION.
12020 APTIC NO. 29532

ABOUT THE PROBLEM OF REPRESENTATIVE SAMPLING IN THE CASE OF WET SANDBLASTING.
12033 APTIC NO. 29542

CONSIDERATIONS IN THE CONSTRUCTION OF LARGE REFUSE INCINERATORS.
12026 APTIC NO. 29547

DETERMINATION OF LEAD CONTENTS IN AUTOMOBILE EXHAUST GAS.
12013 APTIC NO. 29661

INVESTIGATION OF HEAVY METAL POLLUTION IN IWAKI CITY.
12007 APTIC NO. 29787

CEMENT DUST AT GREAT BRITAIN.
12001 APTIC NO. 29832

TREATMENT OF MUNICIPAL TRASH BY SANITATION TRUCK.
12049 APTIC NO. 29979

THE EMISSION AND IMMISSION CONDITIONS OF THE POWER PLANTS IN THE BOEHLENER AREA.
12045 APTIC NO. 30072

MEASUREMENT DATA OBTAINED FROM EXPERIMENTS WITH THE DYNAVANE HIGH CAPACITY DRY TYPE DUST SEPARATOR.
12108 APTIC NO. 28791

DUST COLLECTOR FOR ELECTRIC FURNACE MANUFACTURING FERROALLOY.
12123 APTIC NO. 29481

MODERN DUST CONTROL.
12217 APTIC NO. 29486

POLLUTION CONTROL SYSTEMS FOR ASPHALT PLANTS.
12233 APTIC NO. 29492

ON CONDITIONS FOR PROPER USE OF ACTIVATED CARBON AS AN AIR PURIFICATION AGENT (2) - ITS EFFICIENCY FOR REMOVAL OF SO2 GAS.
12113 APTIC NO. 29496

EXHAUST GAS CLEANER FOR DIESEL ENGINES.
12221 APTIC NO. 29533

MITSUBISHI-RESEARCH DISC SCRUBBER.
12080 APTIC NO. 29536

MITSUBISHI-RESEARCH WEDGE SCRUBBER.
12081 APTIC NO. 29537

OBSERVATIONS ON THE ELIMINATION OF DUST.
12143 APTIC NO. 29554

MEASURES TAKEN BY THE REGIONAL SOCIAL SECURITY ADMINISTRATION OF LIMOGES TO REDUCE THE RISKS OF SILICOSIS.
12171 APTIC NO. 29561

STUDY OF DUSTINESS AND PURIFICATION OF AIR IN A QUARRY.
12128 APTIC NO. 29562

A NEW FILTER FOR SUSPENDED MATTER WITH HIGH COLLECTION EFFICIENCY AND LOW FLOW RESISTANCE.
12231 APTIC NO. 29578

OUTLOOK OF ENVIRONMENTAL POLLUTION AND ITS PREVENTION TECHNOLOGY.
12124 APTIC NO. 29600

PREVENTION OF AIR POLLUTION ON IRON FOUNDRY.
12178 APTIC NO. 29602

ENVIRONMENTAL POLLUTION CONTROL MEASURES IN WEST EUROPE AND PROBLEMS OF CARBIDE ELECTRIC FURNACE DUST IN JAPAN.
12073 APTIC NO. 29675

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

DEVELOPMENT OF A NEW DUST COLLECTOR.
12056 APTIC NO. 29686

TECHNOLOGY RENDERS ITS SERVICES TO AIR PURIFICATION AND NOISE SUPPRESSION AS PART OF ENVIRONMENTAL HYGIENE.
12227 APTIC NO. 29725

PERFORMANCE OF CYCLONE FOR LOW-PRESSURE AIR FLOW.
12182 APTIC NO. 29728

ELECTROSTATIC PRECIPITATORS FOR CEMENT AND LIME INDUSTRY.
12169 APTIC NO. 29735

DEVELOPMENT OF GAS PURIFICATION INSTALLATIONS FOR ELECTRIC MELTING FURNACES.
12204 APTIC NO. 29740

ON PUBLIC NUISANCE BY, AND ENVIRONMENTAL HYGIENE OF, PAINT MANUFACTURING INDUSTRY.
12059 APTIC NO. 29761

PURIX WET COLLECTOR FOR WASTE GAS CLEANING.
12060 APTIC NO. 29767

EFFICIENCY OF FILTERS FOR RADIOACTIVE AEROSOL.
12155 APTIC NO. 29768

STEAM-SMOKE MIST CONTACT DEVICE.
12174 APTIC NO. 29792

ELECTRIC DUST COLLECTION DEVICE.
12151 APTIC NO. 29819

POLLUTION CONTROL AT THE SAGAMIHARA PLANT OF OUR TOKYO MACHINERY WORKS.
12199 APTIC NO. 29821

PROGRESS IN DEDUSTING TECHNIQUE IN CEMENT WORKS.
12125 APTIC NO. 29830

DUST COLLECTING SYSTEMS IN CEMENT WORKS.
12106 APTIC NO. 29831

REPORT ON THE INVESTIGATION INTO THE MAINTENANCE AND THE SUPERVISION OF AIR-CLEANING APPARATUS AS AN INDICATION OF AIR POLLUTION.
12122 APTIC NO. 29840

EXPERIMENTAL RESEARCH ON LOW EXCESS AIR COMBUSTION IN BOILER BURNING HEAVY OIL ONLY.
12142 APTIC NO. 29860

THE NEW DUPLEX IRON MELTING PLANT AT THE M. BUSCH KG IN WEHRSTAPEL.
12094 APTIC NO. 29861

SELECTION OF FILTRATION EQUIPMENT FOR SULPHUR AND POTASH PROCESSING.
12160 APTIC NO. 29902

ACTIVATED CARBON INDUSTRY AND PROBLEMS IN FUTURE - SPHERICAL ACTIVATED CARBON FROM COAL.
12235 APTIC NO. 29942

REMOVAL OF BROWN FUME FROM WASTE GASES OF OPEN HEARTH FURNACE OXYGEN STEELMAKING PROCESS.
12194 APTIC NO. 29945

COMBUSTION OF WASTES CENTERING AROUND REMOVAL OF NOXIOUS GAS.
12077 APTIC NO. 29985

THE PROBLEM OF INDUSTRIAL DUST: WAYS TO REGULATE ITS COLLECTION.
12099 APTIC NO. 29990

ELECTROSTATIC FIELD BREAKDOWN PHENOMENA IN APPLYING CHARGED PARTICLES.
12236 APTIC NO. 30006

AIR FILTRATION SYSTEM FOR ELECTRIC FURNACE SWITCH GEAR AT LUKENS STEEL.
12065 APTIC NO. 30018

IMPROVEMENTS IN OR RELATING TO ELECTRO-PRECIPITATORS.
12110 APTIC NO. 30044

JOINT DEMONSTRATION OF METHODS FOR EXTINGUISHMENT AND CONTROL OF BURNING COAL REFUSE PILES. (FINAL REPORT).
12066 APTIC NO. 30057

ON DOUBLE HEAD-CUT CONES TYPE CENTRIFUGAL DUST COLLECTOR.
12148 APTIC NO. 30070

ON A DUST-COLLECTING DEVICE FOR A FERROSILICON FURNACE.
12219 APTIC NO. 30086

SUMMARY OF H2SO4 MANUFACTURE.
12068 APTIC NO. 30099

ANNUAL SURVEY ON CUPOLA FURNACES, SEQUENCE EIGHT.
12101 APTIC NO. 30101

GRAVITATIONAL AND DRY CENTRIFUGAL COLLECTORS AND AIR POLLUTION CONTROL.
12095 APTIC NO. 30123

EXPERIMENTAL INVESTIGATION OF THE PROCESS OF CENTRIFUGAL DUST SEPARATION.
12245 APTIC NO. 30133

METAL COMPONENTS OF FLOATING DUST.
12286 APTIC NO. 29464

LUMINESCT SPECTROMETER ANALYSIS METHOD OF QUANTITATIVE ANALYSIS OF METALS IN DUST FLOATING IN ATMOSPHERE.
12279 APTIC NO. 29466

RECORDING DEVICE COMBINED WITH THERMAL PRECIPITATOR FOR MEASURING DUST CONTENT IN AIR.
12285 APTIC NO. 29540

APPARATUS FOR TEST PREPARATION IN VERY HUMID ATMOSPHERES AND IN PARTICULAR AT DRILLING OPERATIONS.
12253 APTIC NO. 29541

A PHOTOGRAPHIC METHOD OF DETERMINING THE EMISSION OF DUST GENERATED BY INDUSTRIAL MACHINERY.
12254 APTIC NO. 29544

COMPARISON OF VARIOUS METHODS OF DETERMINING QUARTZ CONTENT IN NOXIOUS DUST.
12263 APTIC NO. 29546

THE IMPORTANCE OF AGGREGATION PHENOMENA IN THE QUANTITATIVE ESTIMATE OF DUST IN THE AIR.
12354 APTIC NO. 29549

RESULTS OF COMPARATIVE TESTS ON QUARTZ CONTENT OBTAINED FROM LABORATORIES USING VARIOUS TECHNIQUES OF DETERMINATION.
12327 APTIC NO. 29552

OBSERVATIONS CONCERNING THE USE OF THE A.R.M. APPARATUS AND THE POSSIBILITIES OF UTILIZING THE RESULTS FOR PREVENTIVE MEASURES.
12291 APTIC NO. 29556

THE PROBLEM OF REPRESENTATIVE SAMPLING. CONDITIONS FOR CORRECT USE OF AN APPARATUS FOR SAMPLING.
12252 APTIC NO. 29557

DETERMINATION OF A DOCTRINE FOR VALID SAMPLING.
12273 APTIC NO. 29560

GENERAL REMARKS ABOUT DUST SAMPLING.
12321 APTIC NO. 29564

NEW METHODS OF DETERMINING AIR POLLUTION.
12316 APTIC NO. 29595

OXIDATION OF NITROGEN MONOXIDE.
12320 APTIC NO. 29676

EXPERIENCES WITH FLUORINE EMISSION MEASUREMENTS.
12290 APTIC NO. 29737

MEASUREMENT OF GASEOUS AND PARTICULATE FLUORINE EMISSIONS.
12322 APTIC NO. 29738

POROUS ANALYTICAL FILTERS AND THEIR USE IN AIR HYGIENE.
12346 APTIC NO. 29784

STUDY OF POLYCYCLIC HYDROCARBONS FIXED ON ATMOSPHERIC DUSTS.
12270 APTIC NO. 29851

DETERMINATION OF AROMATIC HYDROCARBONS EMITTED FROM THE DRY BATTERY PLANT.
12287 APTIC NO. 29862

MEASUREMENT OF ATMOSPHERIC DUST BY LIGHT SCATTERING METHOD AND HIGH VOLUME SAMPLER METHOD.
12357 APTIC NO. 29864

MEASUREMENTS OF AIRBORNE DUST.
12288 APTIC NO. 29885

EMISSION MONITORING WITH ACKNOWLEDGED MEASURING UNITS AND ANALYZERS.
12260 APTIC NO. 29955

ATMOSPHERIC POLLUTION. APPARATUS FOR MEASURING THE CONCENTRATION OF CONDENSATION NUCLEI IN THE ATMOSPHERE.
12267 APTIC NO. 30041

A MATHEMATICAL MODEL FOR MEASURING MASS/NUMBER INDEX OF RESPIRABLE AIRBORNE COAL DUST.
12258 APTIC NO. 30081

SOURCE SAMPLING OF ATMOSPHERIC CONTAMINANTS.
12248 APTIC NO. 30118

TENTATIVE METHOD OF ANALYSIS FOR DUSTFALL FROM THE ATMOSPHERE.
12344 APTIC NO. 30119

ATMOSPHERIC POLLUTION AT MODERN COKE WORKS.
12380 APTIC NO. 29257

STUDY OF THE SUSPENDED PARTICULATES AND LEAD CONCENTRATION IN THE AIR WITHIN THE CITY LIMITS OF MAGDEBURG.
12382 APTIC NO. 29515

INTERPRETATION OF RESULTS OF EXAMINATION OF AIR.
12386 APTIC NO. 29545

BENZPYRENE AND OTHER AROMATIC HYDROCARBONS IN THE DUST OF POLISH TOWNS.
12385 APTIC NO. 29569

TEN YEARS OF AIR POLLUTION IN HOKKAIDO.
12367 APTIC NO. 29727

A REPORT OF THE PERIODIC MEASUREMENT OF SOOT AND DUST, AND SULFUR OXIDES IN THE AIR AROUND THE HOSPITAL.
12381 APTIC NO. 29794

LEAD CONCENTRATION IN YOKOHAMA AIR.
12399 APTIC NO. 29814

POLLUTIONS AND TOKYO METROPOLITAN GOVERNMENT.
12365 APTIC NO. 29973

SEASONAL VARIATION OF THE CONCENTRATION OF HEAVY METALS IN SUSPENDED DUST ON THE MAIN STREETS.
12384 APTIC NO. 30025

CONCASTER, AN AREA STUDY.
12366 APTIC NO. 30047

STUDIES ON AIR POLLUTION DUE TO AUTOMOBILE EXHAUST. REPORT 15: AIR POLLUTION AT THE VICINITY OF BOOTHS IN MEISHIN HIGHWAY.
12389 APTIC NO. 30075

THE TENDENCY OF AIR POLLUTION AT NAGOYA CITY OBSERVED FROM THE WEIGHT OF FALLING DUST.
12396 APTIC NO. 30076

ATMOSPHERIC DISPERSION OF STACK EFFLUENTS.
12458 APTIC NO. 29773

DISSIPATION AND PRECIPITATION OF DUST EMITTED BY A STEELWORKS.
12466 APTIC NO. 29829

TRACE ELEMENTS IN ATMOSPHERIC PRECIPITATION AROUND THE OTKAZNOE RESERVOIR.
12432 APTIC NO. 29910

COAGULATION OF DUST PARTICLES, IN PARTICULAR BY AEROSOLS OF SEA WATER SALT.
ERROR

OBSERVATIONS ON THE FIGHT AGAINST DUST BY MEANS OF SALINE AEROSOLS.
12475 APTIC NO. 29551

ELECTROSTATIC FILTER USING DIELECTRIC FILTER MATERIAL.
12515 APTIC NO. 29596

A NEW DUST-GENERATING SYSTEM FOR INHALATION STUDIES.
12486 APTIC NO. 29653

A CONTRIBUTION TO THE EVALUATION OF THE RISK OF SILICOSIS.
12549 APTIC NO. 29558

CHART FOR EVALUATION OF THE RISK OF SILICOSIS.
12542 APTIC NO. 29559

TWO OBSERVATIONS IN A FLUORSPAR QUARRY.
12535 APTIC NO. 29565

STUDIES OF THE SIGNIFICANCE OF DUSTS AND GASES FOR THE PATHOLOGY OF INFECTIONS OF THE RESPIRATORY TRACT.
12529 APTIC NO. 29571

ON THE RELATIONSHIP BETWEEN AIR POLLUTION AND MORBIDITY AND MORTALITY OF THE POPULATION IN POLISH TOWNS.
12563 APTIC NO. 29575

THE INFLUENCE OF AIR POLLUTION ON PUBLIC HEALTH.
12586 APTIC NO. 29589

ADDITION OF LEAD TO FUEL - HARMFUL OR DANGEROUS? (Bleizusaetze im Kraftstoff - harmlos oder gefaehrlich)? Text in German. VDI (Ver. Deut. Ingr.) Nachr. (Berlin), 25(9):6, 1971.
12527 APTIC NO. 30000

SOME HEALTH SURVEY RESULTS OF UNDERGROUND GARAGE WORKERS.
12568 APTIC NO. 30074

PROBLEMS OF FLUORINE EMISSION MEASUREMENTS.
12608 APTIC NO. 29736

THE EFFECTS OF AIR POLLUTION ON VEGETATION.
12600 APTIC NO. 30003

THE PRESENT RESULTS OF DETERMINATIONS OF 3,4-BENZPYRENE IN THE AIR OVER BUDAPEST.
12631 APTIC NO. 29590

ON EXAMPLE OF PRACTICAL APPLICATION OF DUST COLLECTOR FOR ELECTRIC FURNACE FOR FERRO-ALLOY.
12632 APTIC NO. 29892

ON OUTLINE OF MACHINERY CREDIT INSURANCE AND ITS APPLICATION TO DUST COLLECTION EQUIPMENT.
12634 APTIC NO. 30087

ATMOSPHERIC POLLUTANTS FRENCH LEGISLATION. STANDARD MEASURING METHODS. RECENT COMMERCIAL APPARATUS.
12638 APTIC NO. 29003

COMPARATIVE STUDY OF PERMISSIBLE LIMITS OF AIR DUSTINESS IN VARIOUS COUNTRIES.
12639 APTIC NO. 29543

EXPANSION AND STRENGTHENING OF AIR POLLUTION CONTROL COUNTERMEASURES.
12671 APTIC NO. 29495

ON THE BASIC LAW FOR ENVIRONMENTAL POLLUTION CONTROL, NOISE CONTROL LAW, WATER POLLUTION PREVENTION LAW, AND AIR POLLUTION PREVENTION LAW.
12670 APTIC NO. 29509

ADDENDUM TO ENVIRONMENTAL POLLUTIONS IN KAWASAKI CITY.
12647 APTIC NO. 29511

COMMISSION FOR INDUSTRIAL DUST PROBLEMS IN GERMANY.
12520 APTIC NO. 29555

PRESENT SITUATION OF ADMINISTRATION CONCERNING POLLUTIONS.
12648 APTIC NO. 29598

CHIBA PREFECTURAL ORDINANCE ON POLLUTIONS CONTROL AND ENFORCEMENT REGULATION OF ORDINANCE.
12649 APTIC NO. 29679

POLLUTIONS PREVENTION PLAN FOR CHIBA AND ICHIHARA CITIES IN CHIBA PREFECTURE.
12650 APTIC NO. 29813

MATERIALS FOR REFERENCE ABOUT ENVIRONMENTAL POLLUTION CONTROL.
12651 APTIC NO. 29818

CASTING WORK ENVIRONMENTS AND PUBLIC NUISANCE.
12655 APTIC NO. 29975

NOBODY BREATHES FRESH AIR. FACTS AND ARGUMENTS ABOUT AIR POLLUTION.
12677 APTIC NO. 29439

DYNAMOMETERS

CONTROL OF EXHAUST GAS EMISSION OF MITSUBISHI COLT GALANT.
12228 APTIC NO. 29901

IT BEGAN WITH THE SMOG IN CALIFORNIA. CALIFORNIA TEST, EUROPEAN TEST--INTERNATIONAL REGULATIONS OF AUTOMOBILE EXHAUST GAS EMISSIONS.
12640 APTIC NO. 30069

E

ECONOMIC LOSSES

MARKET TENDENCIES FOR LEAD AND ZINC.
12003 APTIC NO. 30001

JOINT DEMONSTRATION OF METHODS FOR EXTINGUISHMENT AND CONTROL OF BURNING COAL REFUSE PILES. (FINAL REPORT).
12066 APTIC NO. 30057

VALUE ANALYSIS OF COAL.
12629 APTIC NO. 30122

EDUCATION

LEGAL ASPECTS OF AIR POLLUTION IN BELGIUM AND OTHER NEIGHBORING COUNTRIES.
12659 APTIC NO. 30040

THE ENVIRONMENTAL CRISIS: THROUGH A GLASS DARKLY.
12674 APTIC NO. 29619

ELECTRIC CHARGE

ELECTROSTATIC FIELD BREAKDOWN PHENOMENA IN APPLYING CHARGED PARTICLES.
12236 APTIC NO. 30006

LAB TESTS SHOW ELECTRIC FIELD MIGHT HELP REDUCE ENGINE KNOCK.
12088 APTIC NO. 30036

SCAVENGING IN PERSPECTIVE.
12422 APTIC NO. 29688

COLLECTION EFFICIENCIES OF RAINDROPS FOR SUBMICRON PARTICULATES.
12404 APTIC NO. 29709

COLLECTION EFFICIENCY IN WASHOUT BY RAIN.
12406 APTIC NO. 29710

CONTINUOUS CHARGED CLOUD-PARTICLE SAMPLER.
12451 APTIC NO. 29712

CARBON MONOXIDE IN RAINWATER.
12460 APTIC NO. 29880

A NEW DUST-GENERATING SYSTEM FOR INHALATION STUDIES.
12486 APTIC NO. 29653

CHARGES ON DROPLETS PRODUCED BY ATOMIZATION OF SOLUTIONS.
12482 APTIC NO. 29919

ELECTRIC FURNACES

EXPERIMENTAL STUDY ON PLASTICS INCINERATION.
12017 APTIC NO. 29841

DUST COLLECTOR FOR ELECTRIC FURNACE MANUFACTURING FERROALLOY.
12123 APTIC NO. 29481

MITSUBISHI-RESEARCH DISC SCRUBBER.
12080 APTIC NO. 29536

ENVIRONMENTAL POLLUTION CONTROL MEASURES IN WEST EUROPE AND PROBLEMS OF CARBIDE ELECTRIC FURNACE DUST IN JAPAN.
12073 APTIC NO. 29675

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

DEVELOPMENT OF GAS PURIFICATION INSTALLATIONS FOR ELECTRIC MELTING FURNACES.
12204 APTIC NO. 29740

ON A DUST-COLLECTING DEVICE FOR A FERROSILICON FURNACE.
12219 APTIC NO. 30086

POLLUTIONS AND TOKYO METROPOLITAN GOVERNMENT.
12365 APTIC NO. 29973

HOW EMISSION CONTROL AFFECTS MELTING COSTS.
12628 APTIC NO. 29879

ON EXAMPLE OF PRACTICAL APPLICATION OF DUST COLLECTOR FOR ELECTRIC FURNACE FOR FERRO-ALLOY.
12632 APTIC NO. 29892

PRESENT SITUATION OF ADMINISTRATION CONCERNING POLLUTIONS.
12648 APTIC NO. 29598

ELECTRIC POWER PRODUCTION

A NATIONAL ESTIMATE OF PUBLIC AND INDUSTRIAL HEAT REJECTION REQUIREMENTS BY DECADES THROUGH THE YEAR 2000 AD.
12018 APTIC NO. 29272

THE INFLUENCE OF ENVIRONMENTAL PROTECTION ON PLANNING, OPERATION AND ECONOMY OF STEAM POWER PLANTS. I. MAINTENANCE OF CLEAN AIR.
12036 APTIC NO. 29519

MARKET DEVELOPMENT IN GAS ECONOMY.
12010 APTIC NO. 29781

THE EMISSION AND IMMISSION CONDITIONS OF THE POWER PLANTS IN THE BOEHLENER AREA.
12045 APTIC NO. 30072

EXPERIMENTS CONCERNING STOICHIOMETRIC COMBUSTION IN OIL-FIRED FURNACES OF FRENCH POWER PLANTS.
12090 APTIC NO. 29513

VENTILATION AND EXPLOSION EXPERIMENTS IN A WATER-TUBE BOILER OF A POWER PLANT.
12091 APTIC NO. 29514

OUTLOOK OF ENVIRONMENTAL POLLUTION AND ITS PREVENTION TECHNOLOGY.
12124 APTIC NO. 29600

FEASIBILITY STUDY OF NEW SULFUR OXIDE CONTROL PROCESSES FOR APPLICATION TO SMELTERS AND POWER PLANTS. PART IV: THE WELLMAN-LORD SO2 RECOVERY PROCESS FOR APPLICATION TO POWER PLANT FLUE GASES. (FINAL REPORT).
12208 APTIC NO. 29641

POLLUTION TECHNOLOGY--WHAT THEY RE DOING OVERSEAS.
12244 APTIC NO. 29650

NEW WAYS TO MORE POWER WITH LESS POLLUTION.
12166 APTIC NO. 29658

DESULFURIZATION OF WASTE GASES AND FUELS.
12205 APTIC NO. 29957

KINETICS OF RECOVERING SULFUR FROM THE SPENT SEED IN AN MHD POWER PLANT.
12118 APTIC NO. 30048

REDUCING SO2 EMISSION FROM STATIONARY SOURCES.
12098 APTIC NO. 30102

AIR POLLUTION DERIVING FROM HEATING PLANTS AND INDUSTRIAL PROCESSES AND ITS CONTROL.
12229 APTIC NO. 30106

EXPERIMENTAL INVESTIGATION OF THE PROCESS OF CENTRIFUGAL DUST SEPARATION.
12245 APTIC NO. 30133

ANALYZERS FOR MONITORING AIR QUALITY IN POLLUTION.
12272 APTIC NO. 29634

PRODUCTION OF GASES OF KNOWN SPECIFIC ACTIVITY IN A REACTOR FOR CALIBRATING GASEOUS EFFLUENT MONITORS.
12264 APTIC NO. 29848

MERCURY IN THE AIR.
12362 APTIC NO. 29490

BENZPYRENE AND OTHER AROMATIC HYDROCARBONS IN THE DUST OF POLISH TOWNS.
12385 APTIC NO. 29569

POLLUTIONS AND TOKYO METROPOLITAN GOVERNMENT.
12365 APTIC NO. 29973

NEW EYE ON THE AIR.
12412 APTIC NO. 29644

SCAVENGING OF AEROSOL PARTICLES BY SPRAYS.
12437 APTIC NO. 29711

NO-X CONTROL FROM STATIONARY SOURCES.
12427 APTIC NO. 29764

TOWARD A RATIONAL POWER POLICY: RECONCILING NEEDS FOR ENERGY AND ENVIRONMENTAL PROTECTION.
12403 APTIC NO. 29986

PROGRESS REPORT. JANUARY-DECEMBER 1969.
12555 APTIC NO. 28850

ON HYGIENIC AND TOXICOLOGICAL PROBLEMS OF POLLUTION BY ARSENIC.
12534 APTIC NO. 29587

AN SO2 REMOVAL AND RECOVERY PROCESS.
12630 APTIC NO. 29144

INDUSTRIAL REACTION TO SULPHUR DIOXIDE CONTROL EQUIPMENT AND STANDARDS.
12637 APTIC NO. 29604

EXPANSION AND STRENGTHENING OF AIR POLLUTION CONTROL COUNTERMEASURES.
12671 APTIC NO. 29495

PRESENT SITUATION OF ADMINISTRATION CONCERNING POLLUTIONS.
12648 APTIC NO. 29598

CHIBA PREFECTURAL ORDINANCE ON POLLUTIONS CONTROL AND ENFORCEMENT REGULATION OF ORDINANCE.
12649 APTIC NO. 29679

SOME RECENT TOPICS IN AIR POLLUTION AND HEALTH IN NEW YORK.
12668 APTIC NO. 29817

LONG RANGE PLANNING IN AIR RESOURCE MANAGEMENT.
12657 APTIC NO. 30056

OUR ENVIRONMENT--OPTIONS ON THE WAY INTO THE FUTURE.
12675 APTIC NO. 29722

ELECTRIC PROPULSION

BUS AND VEHICLE FOR TRANSPORTATION WITH ELECTRIC DRIVE.
11987 APTIC NO. 29517

EXPERIMENTS WITH ELECTRIC VEHICLES.
11989 APTIC NO. 29886

COUNTERMEASURES ON AUTOMOBILE EXHAUST GAS.
12050 APTIC NO. 29935

THE AUTOMOBILE AND AIR POLLUTION.
12186 APTIC NO. 29633

ALMOST POLLUTION-FREE POWERPLANTS ARE SCHEDULED FOR EARLY 1975.
12092 APTIC NO. 29856

ELECTRICAL PROPERTIES

A NEW ENVIRONMENTAL POLLUTANT - POLYCHLORINATED BIPHENYLS (PCB).
12044 APTIC NO. 29984

COMPARISON OF THE CATALYTIC ACTIVITY OF MANGANESE DIOXIDE OF ELECTROLYTIC ORIGIN AND OF MANGANESE HYDROXIDE IN THE OXIDATION OF CARBON OXIDES. IV. ADSORPTION AND DESORPTION OF THE REAGENTS AND THE PRODUCTS OF THE REACTION ON MANGANESE HYDROXIDE.
12192 APTIC NO. 29506

A NEW FILTER FOR SUSPENDED MATTER WITH HIGH COLLECTION EFFICIENCY AND LOW FLOW RESISTANCE.
12231 APTIC NO. 29578

NEW WAYS TO MORE POWER WITH LESS POLLUTION.
12166 APTIC NO. 29658

ON REGENERATION OF ACTIVATED CARBON HAVING ADSORBED SO2.
12173 APTIC NO. 29732

ELECTRIC DUST COLLECTION DEVICE.
12151 APTIC NO. 29819

PRINCIPLES OF COLLECTING PARTICULATES: DRY, WET OR ELECTROSTATICALLY.
12232 APTIC NO. 29838

DESULFURIZATION OF EXHAUST GAS.
12078 APTIC NO. 29927

ELECTROSTATIC FIELD BREAKDOWN PHENOMENA IN APPLYING CHARGED PARTICLES.
12236 APTIC NO. 30006

LAB TESTS SHOW ELECTRIC FIELD MIGHT HELP REDUCE ENGINE KNOCK.
12083 APTIC NO. 30036

CONTROL OF POLLUTANT EMISSION AND SULPHURIC ACID CORROSION FROM COMBUSTION OF RESIDUAL FUEL OIL. PART I: LOW-PRESSURE HEATING BOILERS WITH MECHANICAL ATOMIZING BURNERS.
12164 APTIC NO. 30055

PREVENTING AIR POLLUTION FROM EXHAUST AEROSOLS.
12070 APTIC NO. 30125

RECORDING DEVICE COMBINED WITH THERMAL PRECIPITATOR FOR MEASURING DUST CONTENT IN AIR.
12285 APTIC NO. 29540

A GAS ANALYSER FOR THE MEASUREMENT OF IMPURITIES IN AIR.
12277 APTIC NO. 29581

TRIAL CONSTRUCTION OF NON-DISPERSION TYPE VISIBLE LIGHT GAS ANALYZE AND DETERMINATION OF NITROGEN DIOXIDE, CHLORINE, AND BROMINE.
12303 APTIC NO. 29762

SCAVENGING IN PERSPECTIVE.
12422 APTIC NO. 29688

COLLECTION EFFICIENCIES OF RAINDROPS FOR SUBMICRON PARTICULATES.
12404 APTIC NO. 29709

COLLECTION EFFICIENCY IN WASHOUT BY RAIN.
12406 APTIC NO. 29710

CONTINUOUS CHARGED CLOUD-PARTICLE SAMPLER.
12451 APTIC NO. 29712

CARBON MONOXIDE IN RAINWATER.
12460 APTIC NO. 29880

DISSOCIATIVE ELECTRON ATTACHMENT PROCESSES IN SO2 AND NO2.
12444 APTIC NO. 30008

BORDEAUX. STUDY OF ATMOSPHERIC POLLUTION IN THE BUILT-UP AREA.
12420 APTIC NO. 30109

SOME OBSERVATIONS ON THE ABNORMAL AGGLOMERATION OF CARBON BLACK AND OF GRAPHITE POWDER.
12506 APTIC NO. 29548

ELECTROSTATIC FILTER USING DIELECTRIC FILTER MATERIAL.
12515 APTIC NO. 29596

A NEW DUST-GENERATING SYSTEM FOR INHALATION STUDIES.
12486 APTIC NO. 29653

THE SCATTERING OF THERMAL ELECTRONS BY CARBON MONOXIDE.
12484 APTIC NO. 29654

CHARGES ON DROPLETS PRODUCED BY ATOMIZATION OF SOLUTIONS.
12482 APTIC NO. 29919

ELECTRON ENERGY LOSS SPECTRA OF NO2 AND SO2.
12480 APTIC NO. 30079

OZONE AND AIR IONS ACCOMPANYING BIOLOGICAL APPLICATIONS OF ELECTRIC FIELDS.
12594 APTIC NO. 29897

ATMOSPHERIC CORROSION OF SILVER.
12614 APTIC NO. 29951

ELECTRICAL RESISTANCE

NEW WAYS TO MORE POWER WITH LESS POLLUTION.
12166 APTIC NO. 29658

ELECTRIC DUST COLLECTION DEVICE.
12151 APTIC NO. 29819

PRINCIPLES OF COLLECTING PARTICULATES: DRY, WET OR ELECTROSTATICALLY.
12232 APTIC NO. 29838

DESULFURIZATION OF EXHAUST GAS.
12078 APTIC NO. 29927

CONTROL OF POLLUTANT EMISSION AND SULPHURIC ACID CORROSION FROM COMBUSTION OF RESIDUAL FUEL OIL. PART I: LOW-PRESSURE HEATING BOILERS WITH MECHANICAL ATOMIZING BURNERS.
12164 APTIC NO. 30055

BORDEAUX. STUDY OF ATMOSPHERIC POLLUTION IN THE BUILT-UP AREA.
12420 APTIC NO. 30109

ATMOSPHERIC CORROSION OF SILVER.
12614 APTIC NO. 29951

ELECTROCHEMICAL METHODS

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

THE MEASUREMENT OF ATMOSPHERIC POLLUTION IN GERMANY.
12340 APTIC NO. 29066

A MEASUREMENT GRID FOR AIR POLLUTION IN THE MOUTH OF THE RIVER RHINE IN ROTTERDAM.
12333 APTIC NO. 29460

METAL COMPONENTS OF FLOATING DUST.
12286 APTIC NO. 29464

LUMINESCT SPECTROMETER ANALYSIS METHOD OF QUANTITATIVE ANALYSIS OF METALS IN DUST FLOATING IN ATMOSPHERE.
12279 APTIC NO. 29466

EXAMINATION OF QUANTITATIVE ANALYSIS METHOD OF FLUORINE IN VEGETABLE SAMPLES.
12302 APTIC NO. 29467

COMPARISON OF VARIOUS METHODS OF DETERMINING QUARTZ CONTENT IN NOXIOUS DUST.
12263 APTIC NO. 29546

A GAS ANALYSER FOR THE MEASUREMENT OF IMPURITIES IN AIR.
12277 APTIC NO. 29581

AN AUTOMATIC COULOMETRIC ANALYZER OF OZONE IN THE ATMOSPHERE.
12274 APTIC NO. 29757

METHODS OF DETERMINING SULFUR DIOXIDE (REVIEW).
12305 APTIC NO. 29801

DETERMINATION OF ORGANICALLY BOUND CARBON IN MOIST WASTE GASES.
12345 APTIC NO. 29839

TESTS WITH A SAMPLING AND MEASUREMENT METHOD FOR ROUTINE DETERMINATION OF FLUORINE IN THE LOWER ATMOSPHERE.
12262 APTIC NO. 29887

DETERMINATION AND EVALUATION OF LOW CONCENTRATIONS OF INDUSTRIAL AIR POLLUTANTS.
12309 APTIC NO. 30014

LEAD CONCENTRATION IN YOKOHAMA AIR.
12399 APTIC NO. 29814

A STUDY OF AIR POLLUTION AROUND A SULPHURIC ACID PLANT.
12374 APTIC NO. 29883

DISTRIBUTION OF LEAD IN THE AIR NEAR CITY ROADS.
12388 APTIC NO. 29918

THE ADSORPTION OF CARBON MONOXIDE ON CU(001) LEED AND AUGER EMISSION STUDIES.
12496 APTIC NO. 29799

THE REACTION KINETICS OF MERCAPTAN WITH OZONE IN THE PPM RANGE.
12497 APTIC NO. 30016

ATMOSPHERIC CORROSION OF THE ELECTROLYTIC NI-CR COATINGS.
12609 APTIC NO. 30039

ELECTROCONDUCTIVITY ANALY

ATMOSPHERIC POLLUTION IN HEADINGS FOLLOWING SHOTFIRING.
12024 APTIC NO. 29678

INVESTIGATION ON THE MEASURING ERRORS OF CONDUCTOMETRIC SULFUR DIOXIDE ANALYZER USED FOR AIR POLLUTION MONITOR.
12356 APTIC NO. 29398

PROGRESS IN MEASUREMENT OF AIR POLLUTION.
12350 APTIC NO. 29748

ON THE CONTINUOUS MEASUREMENT AND RECORDING OF OXIDANTS BY ELECTRIC CONDUCTIVITY METHOD.
12293 APTIC NO. 29758

EMISSION MONITORING WITH ACKNOWLEDGED MEASURING UNITS AND ANALYZERS.
12260 APTIC NO. 29955

A METER FOR THE SITE DETERMINATION OF HYDROLYSABLE FLUORIDES IN SULPHUR HEXAFLUORIDE.
12336 APTIC NO. 30007

REPORT FROM THE NETHERLANDS: MEASUREMENT GRID FOR AIR POLLUTION.
12364 APTIC NO. 29798

CONTINUOUS CHARGED CLOUD-PARTICLE SAMPLER.
12451 APTIC NO. 29712

ELECTROLYSIS

IMPROVEMENTS IN OR RELATING TO ELECTRO-PRECIPITATORS.
12110 APTIC NO. 30044

AN AUTOMATIC COULOMETRIC ANALYZER OF OZONE IN THE ATMOSPHERE.
12274 APTIC NO. 29757

ATMOSPHERIC CORROSION OF THE ELECTROLYTIC NI-CR COATINGS.
12609 APTIC NO. 30039

ELECTRON MICROSCOPY

EFFICIENCY OF FILTERS FOR RADIOACTIVE AEROSOL.
12155 APTIC NO. 29768

METHOD TO ARREST AND REMOVE WHITE SMOKE PRODUCED FROM MOLTEN ZINC PLATING PROCESS.
12135 APTIC NO. 29940

POROUS ANALYTICAL FILTERS AND THEIR USE IN AIR HYGIENE.
12346 APTIC NO. 29784

A COMPUTERIZED METHOD FOR SIZE CHARACTERIZATION OF ATMOSPHERIC AEROSOLS BY THE SCANNING ELECTRON MICROSCOPE.
12266 APTIC NO. 30019

A CONVENIENT METHOD FOR APPLYING A SUPPORTING FILM TO GRIDS USED ON WALKENHORST THERMAL PRECIPITATOR PLUGS.
12250 APTIC NO. 30116

CONTINUOUS CHARGED CLOUD-PARTICLE SAMPLER.
12451 APTIC NO. 29712

ELECTROSTATIC PRECIPITATO

THE INFLUENCE OF ENVIRONMENTAL PROTECTION ON PLANNING, OPERATION AND ECONOMY OF STEAM POWER PLANTS. I. MAINTENANCE OF CLEAN AIR.
12036 APTIC NO. 29519

DESIGN OF NEW SILVER-RECOVERY INCINERATOR.
12008 APTIC NO. 29635

THE REMOTE HEATING PLANT IN RECKLINGHAUSEN--A CONTRIBUTION TO THE PROTECTION OF THE ENVIRONMENT.
11990 APTIC NO. 29914

THE EMISSION AND IMMISSION CONDITIONS OF THE POWER PLANTS IN THE BOEHLENER AREA.
12045 APTIC NO. 30072

DUST COLLECTOR FOR ELECTRIC FURNACE MANUFACTURING FERROALLOY.
12123 APTIC NO. 29481

MODERN DUST CONTROL.
12217 APTIC NO. 29486

DESIGN OF AN ELECTROSTATIC PRECIPITATOR USING MODELLING AND SIMULATION TECHNIQUES.
12223 APTIC NO. 29639

POLLUTION TECHNOLOGY--WHAT THEY RE DOING OVERSEAS.
12244 APTIC NO. 29650

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

TECHNOLOGY RENDERS ITS SERVICES TO AIR PURIFICATION AND NOISE SUPPRESSION AS PART OF ENVIRONMENTAL HYGIENE.
12227 APTIC NO. 29725

ELECTROSTATIC PRECIPITATORS FOR CEMENT AND LIME INDUSTRY.
12169 APTIC NO. 29735

ELECTRIC DUST COLLECTION DEVICE.
12151 APTIC NO. 29819

PROGRESS IN DEDUSTING TECHNIQUE IN CEMENT WORKS.
12125 APTIC NO. 29830

PRINCIPLES OF COLLECTING PARTICULATES: DRY, WET OR ELECTROSTATICALLY.
12232 APTIC NO. 29838

DESULFURIZATION OF EXHAUST GAS.
12078 APTIC NO. 29927

THE PROBLEM OF INDUSTRIAL DUST: WAYS TO REGULATE ITS COLLECTION.
12099 APTIC NO. 29990

FACTORS TO CONSIDER IN SELECTING AIR POLLUTION CONTROL EQUIPMENT.
12195 APTIC NO. 29996

ELIMINATION OF OXIDES CONTAINED IN CERTAIN RESIDUAL INDUSTRIAL GASES.
12129 APTIC NO. 30043

IMPROVEMENTS IN OR RELATING TO ELECTRO-PRECIPITATORS.
12110 APTIC NO. 30044

CONTROL OF POLLUTANT EMISSION AND SULPHURIC ACID CORROSION FROM COMBUSTION OF RESIDUAL FUEL OIL. PART I: LOW-PRESSURE HEATING BOILERS WITH MECHANICAL ATOMIZING BURNERS.
12164 APTIC NO. 30055

SUMMARY OF H2SO4 MANUFACTURE.
12068 APTIC NO. 30099

AIR POLLUTION DERIVING FROM HEATING PLANTS AND INDUSTRIAL PROCESSES AND ITS CONTROL.
12229 APTIC NO. 30106

PREVENTING AIR POLLUTION FROM EXHAUST AEROSOLS.
12070 APTIC NO. 30125

SIMPLIFIED TECHNIQUES IN AIR POLLUTION MEASUREMENT.
12289 APTIC NO. 29771

A COMPUTERIZED METHOD FOR SIZE CHARACTERIZATION OF ATMOSPHERIC AEROSOLS BY THE SCANNING ELECTRON MICROSCOPE.
12266 APTIC NO. 30019

PIEZOLECTRIC-ELECTROSTATIC AEROSOL MASS CONCENTRATION MONITOR.
12331 APTIC NO. 30061

ELECTROSTATIC FILTER USING DIELECTRIC FILTER MATERIAL.
12515 APTIC NO. 29596

THE COSTS FOR MAINTENANCE OF CLEAN AIR. THE INFLUENCE OF SOCIAL COSTS ON THE SELECTION OF AN INDUSTRIAL SITE.
12633 APTIC NO. 29923

EMISSION INVENTORIES

PROBLEMS OF PUBLIC NUISANCE CAUSED BY BAD ODORS IN HYOGO PREFECTURE.
12029 APTIC NO. 29599

EMISSION STANDARDS

THE EXHAUST GAS COMPOSITION AT THE FM GASOLINE ENGINE.
12046 APTIC NO. 29516

THE INFLUENCE OF ENVIRONMENTAL PROTECTION ON PLANNING, OPERATION AND ECONOMY OF STEAM POWER PLANTS. I. MAINTENANCE OF CLEAN AIR.
12036 APTIC NO. 29519

TRANSPORTATION EMISSIONS.
12175 APTIC NO. 29605

CONTROL OF EXHAUST GAS EMISSION OF MITSUBISHI COLT GALANT.
12228 APTIC NO. 29901

LOSS OF MERCURY FROM CHLORAL-KALI PLANTS.
12120 APTIC NO. 30117

POLLUTION TESTS ON IDLING GASOLINE MOTORS.
12251 APTIC NO. 29765

THE GUIDANCE STANDARD OF THE EQUIPMENT FOR TREATING EXHAUST GASES FROM THE FACTORY (FORMALDEHYDE):APR. 1970.
12636 APTIC NO. 29756

STANDARDS OF AIR POLLUTION.
12643 APTIC NO. 29776

UNLEADED GASOLINE AND SMOG-FREE AUTOS--HOW AND WHY.
12644 APTIC NO. 30035

IT BEGAN WITH THE SMOG IN CALIFORNIA. CALIFORNIA TEST, EUROPEAN TEST--INTERNATIONAL REGULATIONS OF AUTOMOBILE EXHAUST GAS EMISSIONS.
12640 APTIC NO. 30069

EXPANSION AND STRENGTHENING OF AIR POLLUTION CONTROL COUNTERMEASURES.
12671 APTIC NO. 29495

CHIBA PREFECTURAL ORDINANCE ON POLLUTIONS CONTROL AND ENFORCEMENT REGULATION OF ORDINANCE.
12649 APTIC NO. 29679

POLLUTIONS PREVENTION PLAN FOR CHIBA AND ICHIHARA CITIES IN CHIBA PREFECTURE.
12650 APTIC NO. 29813

COMPARATIVE STUDY OF CERTAIN PROVISIONS IN MEMBER STATES FOR CONTROLLING AIR POLLUTION.
12656 APTIC NO. 30052

EMISSIVITY

A COMPUTERIZED METHOD FOR SIZE CHARACTERIZATION OF ATMOSPHERIC AEROSOLS BY THE SCANNING ELECTRON MICROSCOPE.
12266 APTIC NO. 30019

EMPHYSEMA

RAPID ASSESSMENT OF TESTS OF POLLUTANT EFFECTS IN MAN.
12536 APTIC NO. 29431

PATHOLOGICAL STUDY ON THE EXPERIMENTAL RABBITS AT AIR-POLLUTED AREA IN YOKKAICHI.
12590 APTIC NO. 29502

STUDIES ON PROGNOSIS OF CHRONIC BRONCHITIS.
12587 APTIC NO. 29916

CAN ANYTHING BE DONE FOR EMPHYSEMA? J. Louisiana State Med. Soc., 122(7):216-218, July 1970. 18 refs.
12579 APTIC NO. 30137

MODERN OIL BURNING TECHNOLOGY AS DISPLAYED ON THE INTHERM IN STUTTGART AND THE 6.ISH IN FRANKFURT 1971.
12187 APTIC NO. 29824

ENFORCEMENT PROCEDURES

LAW-MAKERS SAY: CLEAN UP OR SHUT DOWN.
12055 APTIC NO. 29628

POLLUTION TESTS ON IDLING GASOLINE MOTORS.
12251 APTIC NO. 29765

HOW THE LAWS AND AGENCIES AFFECT YOU.
12641 APTIC NO. 29113

A PHILOSOPHY OF INDUSTRIAL AIR POLLUTION CONTROL.
12666 APTIC NO. 29485

ON THE BASIC LAW FOR ENVIRONMENTAL POLLUTION CONTROL, NOISE CONTROL LAW, WATER POLLUTION PREVENTION LAW, AND AIR POLLUTION PREVENTION LAW.
12670 APTIC NO. 29509

ADDENDUM TO ENVIRONMENTAL POLLUTIONS IN KAWASAKI CITY.
12647 APTIC NO. 29511

CHIBA PREFECTURAL ORDINANCE ON POLLUTIONS CONTROL AND ENFORCEMENT REGULATION OF ORDINANCE.
12649 APTIC NO. 29679

THE EVOLUTION OF AIR POLLUTION CONTROL LAWS.
12672 APTIC NO. 30020

LEGAL ASPECTS OF AIR POLLUTION IN BELGIUM AND OTHER NEIGHBORING COUNTRIES.
12659 APTIC NO. 30040

COMPARATIVE STUDY OF CERTAIN PROVISIONS IN MEMBER STATES FOR CONTROLLING AIR POLLUTION.
12656 APTIC NO. 30052

ON SOME BASIC PROBLEMS OF THE PURIFICATION OF THE AIR.
12676 APTIC NO. 29591

ENGINE DESIGN MODIFICATIO

COUNTERMEASURES ON AUTOMOBILE EXHAUST GAS.
12050 APTIC NO. 29935

CYLINDER HEAD DESIGN.
12054 APTIC NO. 29624

CONTROL OF EXHAUST GAS EMISSION OF MITSUBISHI COLT GALANT.
12228 APTIC NO. 29901

FIRST RESULTS WITH THE M.A.N.-EXPERIMENTAL GAS TURBINE FOR COMMERCIAL VEHICLES.
12131 APTIC NO. 30088

URBAN POLLUTION BY AUTOMOBILE EXHAUST GAS.
12387 APTIC NO. 29744

ENGINE OPERATING CYCLES

COMBUSTION REGULARITY A KEY TO SPARK-IGNITION ENGINE EMISSIONS REDUCTION? Preprint, Academia R. P. R., Bucharest, 15p., 1970. 4 refs. (Presented at the Internal Combustion Engines Conference, 2nd International, Bucharest (Rumania), 1970.)
12023 APTIC NO. 27641

DETERMINATION OF LEAD CONTENTS IN AUTOMOBILE EXHAUST GAS.
12013 APTIC NO. 29661

PROBLEMS OF AERATION OF THE CRANKCASE OF RECIPROCATING ENGINES WITH AN OTTO WORK CYCLE.
12009 APTIC NO. 29721

COUNTERMEASURES ON AUTOMOBILE EXHAUST GAS.
12050 APTIC NO. 29935

CLOSE SCRUTINY OF AUTOMOBILE EXHAUST GASES. TECHNICAL INSPECTION SERVICE FOR AUTOMOBILES IN NEW PREMISES.
12005 APTIC NO. 30002

AN EXPERIMENT ON VALVE RECESSION BY NON-LEADED GASOLINE.
12222 APTIC NO. 29656

EFFECTS OF THE ADDITION OF BARIUM COMPOUND ON THE SMOKE CONCENTRATION OF DIESEL EXHAUST GAS.
12057 APTIC NO. 29696

CONTROL OF EXHAUST GAS EMISSION OF MITSUBISHI COLT GALANT.
12228 APTIC NO. 29901

EXHAUST EMISSIONS FROM HEAVY DUTY VEHICLES.
12332 APTIC NO. 27631

IT BEGAN WITH THE SMOG IN CALIFORNIA. CALIFORNIA TEST, EUROPEAN TEST--INTERNATIONAL REGULATIONS OF AUTOMOBILE EXHAUST GAS EMISSIONS.
12640 APTIC NO. 30069

ENGINE OPERATION MODIFICA

COMBUSTION REGULARITY A KEY TO SPARK-IGNITION ENGINE EMISSIONS REDUCTION? Preprint, Academia R. P. R., Bucharest, 15p., 1970. 4 refs. (Presented at the Internal Combustion Engines Conference, 2nd International, Bucharest (Rumania), 1970.)
12023 APTIC NO. 27641

THE EXHAUST GAS COMPOSITION AT THE FM GASOLINE ENGINE.
12046 APTIC NO. 29516

VEHICLE EMISSIONS.
12027 APTIC NO. 29894

COUNTERMEASURES ON AUTOMOBILE EXHAUST GAS.
12050 APTIC NO. 29935

TAKING ANOTHER LOOK BEFORE WE TAKE THE LEAD OUT.
11997 APTIC NO. 30067

PRACTICAL ANALYTICAL METHOD OF EXHAUST REFLUX EFFECT ON NOX EMISSION CONTROL.
12102 APTIC NO. 29499

AN EXPERIMENTAL STUDY ON THE PERFORMANCE OF A MULTIFUEL ENGINE. PART 3. AN ATTEMPT OF M-COMBUSTION APPLIED TO A SWIRL CHAMBER.
12183 APTIC NO. 29520

EMISSION CONTROL BY EXHAUST MANIFOLD REACTORt-AN INITIAL STUDY FOR SMALL ENGINES.
12163 APTIC NO. 29629

THE AUTOMOBILE AND AIR POLLUTION.
12186 APTIC NO. 29633

CONTROL OF EXHAUST GAS EMISSION OF MITSUBISHI COLT GALANT.
12228 APTIC NO. 29901

ATTEMPT AT A THERMODYNAMIC SOLUTION: AUTOMOBILE EXHAUST GASES.
12147 APTIC NO. 29906

STUDY ON AUTO EXHAUST.
12241 APTIC NO. 29909

EFFECTS OF WATER INJECTION IN INLET TUBE ON NO CONCENTRATION IN DIESEL EXHAUST.
12220 APTIC NO. 29911

TO PREVENT HEAVY OIL COMBUSTION GAS FROM PRODUCING BLACK SMOKE.
12213 APTIC NO. 29930

CAN ADDITIVES DECREASE DIESEL SMOKE? Power, 114(8):60, Aug. 1970.
12023 APTIC NO. 27641

GASOLINE WITHOUT LEAD. TECHNICAL POSSIBILITIES FOR A NON-LEADED FUEL.
12084 APTIC NO. 30010

LAB TESTS SHOW ELECTRIC FIELD MIGHT HELP REDUCE ENGINE KNOCK.
12088 APTIC NO. 30036

FIRST RESULTS WITH THE M.A.N.-EXPERIMENTAL GAS TURBINE FOR COMMERCIAL VEHICLES.
12131 APTIC NO. 30088

EXHAUST GAS EVALUATION BY AIR RATIO COEFFICIENTS.
12278 APTIC NO. 29638

JIS ANALYTICAL PROCESS FOR NITROGEN OXIDES IN WASTE GAS.
12355 APTIC NO. 29677

URBAN POLLUTION BY AUTOMOBILE EXHAUST GAS.
12387 APTIC NO. 29744

EFFECTS OF ATMOSPHERIC CONDITIONS ON AUTOMOBILE EXHAUST GAS COMPOSITIONS.
12461 APTIC NO. 29893

A STUDY OF THE CONVERSION OF SO2 TO SO3.
12623 APTIC NO. 30022

ENGINEERS

ENVIRONMENTAL CONTROL AND THE INSURANCE SAFETY ENGINEER.
12170 APTIC NO. 29115

ENZYMES

LEAD IN THE ENVIRONMENT.
12564 APTIC NO. 29493

INFLUENCE OF PROLONGED CARBON MONOXIDE EXPOSURE AND ALTITUDE HYPOXIA ON SERUM LIPIDS IN MAN.
12558 APTIC NO. 29529

EXPERIMENTAL STUDIES ON THE EFFECT OF SMALL DOSES OF LEAD AND SULFUR DIOXIDE.
12532 APTIC NO. 29588

INFLUENCE OF PROLONGED CARBON MONOXIDE EXPOSURE AND HIGH ALTITUDE ON THE COMPOSITION OF BLOOD AND URINE IN MAN.
12559 APTIC NO. 29613

EFFECT OF LONG-TERM JOINT ACTION OF CARBON MONOXIDE, NITROGEN DIOXIDE AND AMMONIUM ON REQUIREMENTS OF ALBINO RATS IN VITAMIN B6.
12572 APTIC NO. 29753

THE ROLE OF TRACE METALS IN CHEMICAL CARCINOGENESIS: ASBESTOS CANCERS.
12543 APTIC NO. 29993

AIR POLLUTION OXIDANTS - THEIR EFFECTS ON METABOLIC PROCESSES IN PLANTS.
12598 APTIC NO. 29524

METABOLIC EFFECTS OF ATMOSPHERIC FLUORIDES ON PLANTS.
12605 APTIC NO. 29616

ABSCISSION: THE PHYTOGERONTOLOGICAL EFFECTS OF ETHYLENE.
12592 APTIC NO. 30060

EPIDEMIOLOGY

STATISTICAL ANALYSES OF AIR POLLUTION SAMPLING FREQUENCY IN AN EPIDEMIOLOGIC STUDY.
12378 APTIC NO. 29655

CANCER MORTALITY IN RELATION TO NATIONAL CONSUMPTION OF CIGARETTES, SOLID FUEL, TEA AND COFFEE.
12585 APTIC NO. 29608

ITAI-ITAI (OUCH-OUCH) DISEASE AND CADMIUM POLLUTION IN JAPAN.
12581 APTIC NO. 29673

THE RESEARCH FOR THE EFFECTS OF AIR POLLUTION ON THE HUMAN BODY. (II) THE RELATIONSHIP BETWEEN ASTHMA-LIKE DISEASES OF THE SCHOOL CHILDREN AND AIR POLLUTION IN KITAKYUSHU.
12524 APTIC NO. 29683

STUDY ON THE EFFECTS OF AIR POLLUTION ON HUMAN BODY--WITH SPECIAL REFERENCE TO OBJECTIVE, COMPARATIVE STUDY OF ALL THE INHABITANTS BY CHEST X-RAY RINDINGS.
12554 APTIC NO. 29904

AIR POLLUTION.
12575 APTIC NO. 29949

ON THE STUDY OF ALLERGIC REACTIONS IN CONNECTION WITH AIR POLLUTION IN SETTLEMENTS WITH INDUSTRIAL DISCHARGES.
12528 APTIC NO. 29981

SIGNAL PROCESSING TECHNIQUES FOR ESTIMATING PARAMETERS OF CERTAIN BIOLOGICAL MODELS.
12570 APTIC NO. 29997

THE ROLE OF AIR POLLUTION ON CHRONIC OBSTRUCTIVE PULMONARY DISEASE.
12539 APTIC NO. 30136

AIR POLLUTION EPIDEMIOLOGY: A WICKED PROBLEM, AN INFORMATIONAL MAZE, AND A PROFESSIONAL RESPONSIBILITY.
12673 APTIC NO. 30138

EQUIPMENT CRITERIA

ENVIRONMENTAL POLLUTION CONTROL MEASURES IN WEST EUROPE AND PROBLEMS OF CARBIDE ELECTRIC FURNACE DUST IN JAPAN.
12073 APTIC NO. 29675

PERFORMANCE OF CHARCOAL-IMPREGNATED FILTER PAPER TYPE CP-20 FOR COLLECTING AIRBORNE RADIOIODINE.
12185 APTIC NO. 29870

OBSERVATIONS CONCERNING THE USE OF THE A.R.M. APPARATUS AND THE POSSIBILITIES OF UTILIZING THE RESULTS FOR PREVENTIVE MEASURES.
12291 APTIC NO. 29556

GENERAL REMARKS ABOUT DUST SAMPLING.
12321 APTIC NO. 29564

EXHAUST GAS EVALUATION BY AIR RATIO COEFFICIENTS.
12278 APTIC NO. 29638

PIEZOLECTRIC-ELECTROSTATIC AEROSOL MASS CONCENTRATION MONITOR.
12331 APTIC NO. 30061

EQUIPMENT STANDARDS

ATMOSPHERIC CORROSION OF THE ELECTROLYTIC NI-CR COATINGS.
12609 APTIC NO. 30039

ESTERS

PLANTS AND POLLUTED AIR.
12230 APTIC NO. 30083

ETHYLENE

EXPERIMENTAL STUDY ON PLASTICS INCINERATION.
12017 APTIC NO. 29841

JIS ANALYTICAL PROCESS FOR NITROGEN OXIDES IN WASTE GAS.
12355 APTIC NO. 29677

ANALYSIS OF HC OF LOW GRADE IN ATMOSPHERE.
12391 APTIC NO. 29482

PHOTOCHEMICAL REACTIONS OF MOTOR VEHICLE EXHAUST GASES.
12402 APTIC NO. 29960

ETHYLENE PRODUCTION FROM OZONE INJURED PLANTS.
12596 APTIC NO. 30059

ABSCISSION: THE PHYTOGERONTOLOGICAL EFFECTS OF ETHYLENE.
12592 APTIC NO. 30060

EVAPORATORS

PULPERS APPLY ODOR CONTROL.
12104 APTIC NO. 30062

EXCESS AIR

EMISSION OF AIR POLLUTANTS FROM AIRCRAFT JET ENGINES.
12035 APTIC NO. 29734

STUDY OF THE COMBUSTION OF PARTLY PRE-MIXED LAMINAR NATURAL GAS FLAMES.
12021 APTIC NO. 29948

TAKING ANOTHER LOOK BEFORE WE TAKE THE LEAD OUT.
11997 APTIC NO. 30067

CARBON MONOXIDE AS A COMBUSTION CONTROL PARAMETER.
12072 APTIC NO. 29471

EXPERIMENTS CONCERNING STOICHIOMETRIC COMBUSTION IN OIL-FIRED FURNACES OF FRENCH POWER PLANTS.
12090 APTIC NO. 29513

DEVELOPMENT OF GAS PURIFICATION INSTALLATIONS FOR ELECTRIC MELTING FURNACES.
12204 APTIC NO. 29740

CALCULATION OF EXCESS AIR FOR COMBUSTION PROCESSES USING O2-TO-N2 RATIO.
12176 APTIC NO. 29796

MODERN OIL BURNING TECHNOLOGY AS DISPLAYED ON THE INTHERM IN STUTTGART AND THE 6.ISH IN FRANKFURT 1971.
12187 APTIC NO. 29824

EXPERIMENTAL RESEARCH ON LOW EXCESS AIR COMBUSTION IN BOILER BURNING HEAVY OIL ONLY.
12142 APTIC NO. 29860

ATTEMPT AT A THERMODYNAMIC SOLUTION: AUTOMOBILE EXHAUST GASES.
12147 APTIC NO. 29906

CONTROL OF POLLUTANT EMISSION AND SULPHURIC ACID CORROSION FROM COMBUSTION OF RESIDUAL FUEL OIL. PART I: LOW-PRESSURE HEATING BOILERS WITH MECHANICAL ATOMIZING BURNERS.
12164 APTIC NO. 30055

LOW POWER HOUSEHOLD OIL BURNING INSTALLATIONS. HOW THEY FUNCTION, PROPOSAL FOR A METHOD OF REGULATING THEM.
12079 APTIC NO. 30108

NO-X CONTROL FROM STATIONARY SOURCES.
12427 APTIC NO. 29764

EXCRETIONS

EFFECT OF LONG-TERM JOINT ACTION OF CARBON MONOXIDE, NITROGEN DIOXIDE AND AMMONIUM ON REQUIREMENTS OF ALBINO RATS IN VITAMIN B6.
12572 APTIC NO. 29753

SOME PLANS FOR FUTURE STUDIES FOR LOW LEVEL OF LEAD ON THE HUMAN BEING.
12553 APTIC NO. 29815

EFFECTS OF ATMOSPHERIC LEAD ON TRAFFIC POLICEMEN IN A MEDIUM SIZED CITY.
12566 APTIC NO. 29958

EXHAUST SYSTEMS

CONSIDERATIONS IN THE CONSTRUCTION OF LARGE REFUSE INCINERATORS.
12026 APTIC NO. 29547

MODERN DUST CONTROL.
12217 APTIC NO. 29486

ELECTRIC DUST COLLECTION DEVICE.
12151 APTIC NO. 29819

COMBUSTION PLANT FOR RUBBER-COATED EQUIPMENT, TANKS AND CABLES.
12191 APTIC NO. 29834

REPORT ON THE INVESTIGATION INTO THE MAINTENANCE AND THE SUPERVISION OF AIR-CLEANING APPARATUS AS AN INDICATION OF AIR POLLUTION.
12122 APTIC NO. 29840

METHOD TO ARREST AND REMOVE WHITE SMOKE PRODUCED FROM MOLTEN ZINC PLATING PROCESS.
12135 APTIC NO. 29940

REMOVAL OF BROWN FUME FROM WASTE GASES OF OPEN HEARTH FURNACE OXYGEN STEELMAKING PROCESS.
12194 APTIC NO. 29945

COMBUSTION OF WASTES CENTERING AROUND REMOVAL OF NOXIOUS GAS.
12077 APTIC NO. 29985

STUDIES OF VENTILATORY MEASURES INDOORS AGAINST POLLEN ALLERGY.
12116 APTIC NO. 30011

EXPERIMENTAL EQUIPMENT

MODERN SULFURIC ACID TECHNOLOGY.
12093 APTIC NO. 29607

FOURIER TRANSFORM SPECTROMETERS.
12313 APTIC NO. 29476

TRIAL CONSTRUCTION OF NON-DISPERSION TYPE VISIBLE LIGHT GAS ANALYZE AND DETERMINATION OF NITROGEN DIOXIDE, CHLORINE, AND BROMINE.
12303 APTIC NO. 29762

RAYLEIGH SCATTERING OF RUBY-LASER LIGHT BY NEUTRAL GASES.
12450 APTIC NO. 28884

COLLECTION EFFICIENCIES OF RAINDROPS FOR SUBMICRON PARTICULATES.
12404 APTIC NO. 29709

CONTINUOUS CHARGED CLOUD-PARTICLE SAMPLER.
12451 APTIC NO. 29712

THE ABSORPTION COEFFICIENT OF A GASEOUS SUBSTANCE ON A SWARMING FILM.
12479 APTIC NO. 29994

EXPERIMENTAL METHODS

MODERN SULFURIC ACID TECHNOLOGY.
12093 APTIC NO. 29607

TENTATIVE METHOD OF ANALYSIS FOR BERYLLIUM CONTENT OF ATMOSPHERIC PARTICULATE MATTER.
12307 APTIC NO. 29487

APPLICATION OF FLUORIMETRY IN SMOKE MEASUREMENT.
12280 APTIC NO. 29704

STUDIES ON LEAD CHROMATE OBTAINED FROM TETRAALKYL LEAD IN LEADED GASOLINE. I. X-RAY DIFFRACTION TESTS OF THE LEAD CHROMATE CRYSTALS.
12296 APTIC NO. 29810

A METER FOR THE SITE DETERMINATION OF HYDROLYSABLE FLUORIDES IN SULPHUR HEXAFLUORIDE.
12336 APTIC NO. 30007

COLLECTION EFFICIENCY OF WATER DROPLETS IN AGCL AEROSOL.
12430 APTIC NO. 29687

SCAVENGING OF TRACER IN SEVERE STORMS.
12417 APTIC NO. 29691

SOME RESULTS OF LIDAR PROBING OF THE TROPOSHERE.
12434 APTIC NO. 30105

MICROEMISSION SPECTROCHEMICAL ANALYSIS OF HUMAN LUNGS FOR BERYLLIUM.
12580 APTIC NO. 29475

EXPLOSIONS

ATMOSPHERIC POLLUTION IN HEADINGS FOLLOWING SHOTFIRING.
12024 APTIC NO. 29678

VENTILATION AND EXPLOSION EXPERIMENTS IN A WATER-TUBE BOILER OF A POWER PLANT.
12091 APTIC NO. 29514

ESTIMATION OF VARIANCE OF AIR SAMPLER DATA BASED ON REPLICATE SAMPLES.
12314 APTIC NO. 29642

EXPLOSIVE OXIDATION OF NITROUS OXIDE MIXED WITH OZONE.
12511 APTIC NO. 27268

EXPOSURE CHAMBERS

A NEW DUST-GENERATING SYSTEM FOR INHALATION STUDIES.
12486 APTIC NO. 29653

EXPERIMENTAL STUDIES ON THE EFFECT OF SMALL DOSES OF LEAD AND SULFUR DIOXIDE.
12532 APTIC NO. 29588

EXPERIMENTAL STUDIES ON THE HEALTH EFFECTS OF AUTO EXHAUST GAS IN LOW CONCENTRATIONS. (REPORT 1) PRELIMINARY EXPERIMENT.
12589 APTIC NO. 29921

STUDIES ON THE SMOKE DAMAGE OF TREES. (I) ON THE ACUTE DAMAGE SYMPTOMS BY THE SO2.
12607 APTIC NO. 29976

ETHYLENE PRODUCTION FROM OZONE INJURED PLANTS.
12596 APTIC NO. 30059

EXPOSURE METHODS

THE IRRITANT POTENTIAL OF POLLUTANTS IN THE ATMOSPHERE.
12271 APTIC NO. 29751

CORROSION RATES OF MILD STEEL IN COASTAL, INDUSTRIAL, AND INLAND AREAS OF NORTHERN CALIFORNIA.
12620 APTIC NO. 28810

ALUMINUM MATERIAL FOR THE CHEMICAL INDUSTRY.
12624 APTIC NO. 29922

EYE IRRITATION

THE IRRITANT POTENTIAL OF POLLUTANTS IN THE ATMOSPHERE.
12271 APTIC NO. 29751

ATMOSPHERIC REACTIONS AND SCAVENGING PROCESSES.
12426 APTIC NO. 29774

PHOTOCHEMICAL SMOG AND ITS REACTION MECHANISM.
12459 APTIC NO. 29934

SOME HEALTH SURVEY RESULTS OF UNDERGROUND GARAGE WORKERS.
12568 APTIC NO. 30074

CRITERIA OF INJURIOUSNESS AS THE BASIS OF STANDARDS OF THE HYGIENE OF THE AIR.
12642 APTIC NO. 29574

AIR POLLUTION--THE STATUS TODAY.
12681 APTIC NO. 28923

F

FADING

STANDARD FADING CLOTHES FOR OXIDANTS.
12619 APTIC NO. 29866

FANNING

ATMOSPHERIC DISPERSION OF STACK EFFLUENTS.
12458 APTIC NO. 29773

FANS (BLOWERS)

CONSIDERATIONS IN THE CONSTRUCTION OF LARGE REFUSE INCINERATORS.
12026 APTIC NO. 29547

ELECTRIC DUST COLLECTION DEVICE.
12151 APTIC NO. 29819

COMBUSTION PLANT FOR RUBBER-COATED EQUIPMENT, TANKS AND CABLES.
12191 APTIC NO. 29834

REPORT ON THE INVESTIGATION INTO THE MAINTENANCE AND THE SUPERVISION OF AIR-CLEANING APPARATUS AS AN INDICATION OF AIR POLLUTION.
12122 APTIC NO. 29840

REMOVAL OF BROWN FUME FROM WASTE GASES OF OPEN HEARTH FURNACE OXYGEN STEELMAKING PROCESS.
12194 APTIC NO. 29945

COMBUSTION OF WASTES CENTERING AROUND REMOVAL OF NOXIOUS GAS.
12077 APTIC NO. 29985

STUDIES OF VENTILATORY MEASURES INDOORS AGAINST POLLEN ALLERGY.
12116 APTIC NO. 30011

FARMS

MEASUREMENT OF ATMOSPHERIC LEVELS OF PESTICIDES.
12392 APTIC NO. 29812

ITAI-ITAI (OUCH-OUCH) DISEASE AND CADMIUM POLLUTION IN JAPAN.
12581 APTIC NO. 29673

FEASIBILITY STUDIES

FEASIBILITY STUDY OF NEW SULFUR OXIDE CONTROL PROCESSES FOR APPLICATION TO SMELTERS AND POWER PLANTS. PART IV: THE WELLMAN-LORD SO2 RECOVERY PROCESS FOR APPLICATION TO POWER PLANT FLUE GASES. (FINAL REPORT).
12208 APTIC NO. 29641

FEDERAL GOVERNMENTS

VEHICLE EMISSIONS.
12027 APTIC NO. 29894

LAW-MAKERS SAY: CLEAN UP OR SHUT DOWN.
12055 APTIC NO. 29628

ITAI-ITAI (OUCH-OUCH) DISEASE AND CADMIUM POLLUTION IN JAPAN.
12581 APTIC NO. 29673

ON OUTLINE OF MACHINERY CREDIT INSURANCE AND ITS APPLICATION TO DUST COLLECTION EQUIPMENT.
12634 APTIC NO. 30087

HOW THE LAWS AND AGENCIES AFFECT YOU.
12641 APTIC NO. 29113

COMPARATIVE STUDY OF PERMISSIBLE LIMITS OF AIR DUSTINESS IN VARIOUS COUNTRIES.
12639 APTIC NO. 29543

ON THE BASIC LAW FOR ENVIRONMENTAL POLLUTION CONTROL, NOISE CONTROL LAW, WATER POLLUTION PREVENTION LAW, AND AIR POLLUTION PREVENTION LAW.
12670 APTIC NO. 29509

THE TASKS OF THE PUBLIC HEALTH SYSTEM IN THE FIELD OF THE HYGIENE OF THE AIR IN THE PEOPLE S REPUBLIC OF HUNGARY.
12667 APTIC NO. 29592

THE TASKS OF THE PUBLIC HYGIENE SYSTEM OF THE USSR IN THE FIELD OF THE PURIFICATION OF THE AIR.
12665 APTIC NO. 29594

POLLUTIONS PREVENTION PLAN FOR CHIBA AND ICHIHARA CITIES IN CHIBA PREFECTURE.
12650 APTIC NO. 29813

FEDERALISM MAKES ENVIRONMENTAL PROTECTION DIFFICULT.
12654 APTIC NO. 29969

THE EVOLUTION OF AIR POLLUTION CONTROL LAWS.
12672 APTIC NO. 30020

LEGAL ASPECTS OF AIR POLLUTION IN BELGIUM AND OTHER NEIGHBORING COUNTRIES.
12659 APTIC NO. 30040

COMPARATIVE STUDY OF CERTAIN PROVISIONS IN MEMBER STATES FOR CONTROLLING AIR POLLUTION.
12656 APTIC NO. 30052

FEES

FAST WRITE-OFF AND OTHER TAX RELIEF.
12627 APTIC NO. 30128

FEMALES

RAPID ASSESSMENT OF TESTS OF POLLUTANT EFFECTS IN MAN.
12536 APTIC NO. 29431

ITAI-ITAI (OUCH-OUCH) DISEASE AND CADMIUM POLLUTION IN JAPAN.
12581 APTIC NO. 29673

EFFECTS OF SOOT AND SMOKE ON THE HEALTH OF SCHOOL CHILDREN.
12556 APTIC NO. 29791

THE STUDY OF THE POLLUTED AIR INFLUENCE ON CHILDREN S HEALTH IN RUHRDISTRICT.
12544 APTIC NO. 29899

STUDY ON THE EFFECTS OF AIR POLLUTION ON HUMAN BODY--WITH SPECIAL REFERENCE TO OBJECTIVE, COMPARATIVE STUDY OF ALL THE INHABITANTS BY CHEST X-RAY RINDINGS.
12554 APTIC NO. 29904

SOME HEALTH SURVEY RESULTS OF UNDERGROUND GARAGE WORKERS.
12568 APTIC NO. 30074

FERTILIZER MANUFACTURING

AIR POLLUTION BY NITRIC OXIDE FROM FERTILIZER FACTORIES.
12051 APTIC NO. 29568

PROBLEMS OF PUBLIC NUISANCE CAUSED BY BAD ODORS IN HYOGO PREFECTURE.
12029 APTIC NO. 29599

PROCESS FOR THE SEPARATION OF SULFUR FROM GAS.
12052 APTIC NO. 29273

FERTILIZING

THE PREVENTION OF POLLUTION.
12416 APTIC NO. 29623

FIELD TESTS

PESTICIDES IN AIR. VOLATILIZATION OF SOIL-APPLIED DDT AND DDD FROM FLOODED AND NONFLOODED PLOTS.
12047 APTIC NO. 29620

AIR POLLUTION TEST METHODS COMPARED IN INCINERATOR EVALUATION PROGRAM.
12119 APTIC NO. 29837

REPORT ON THE INVESTIGATION INTO THE MAINTENANCE AND THE SUPERVISION OF AIR-CLEANING APPARATUS AS AN INDICATION OF AIR POLLUTION.
12122 APTIC NO. 29840

UTILIZATION OF CATALYST IN AIR POLLUTION CONTROL (5).
12240 APTIC NO. 29898

CONTROL OF EXHAUST GAS EMISSION OF MITSUBISHI COLT GALANT.
12228 APTIC NO. 29901

REMOVAL OF BROWN FUME FROM WASTE GASES OF OPEN HEARTH FURNACE OXYGEN STEELMAKING PROCESS.
12194 APTIC NO. 29945

JOINT DEMONSTRATION OF METHODS FOR EXTINGUISHMENT AND CONTROL OF BURNING COAL REFUSE PILES. (FINAL REPORT).
12066 APTIC NO. 30057

REPORT FOR THE INVESTIGATION ON THE METHOD OF SO2 TEST.
12301 APTIC NO. 29381

ESTIMATION OF VARIANCE OF AIR SAMPLER DATA BASED ON REPLICATE SAMPLES.
12314 APTIC NO. 29642

CONCASTER, AN AREA STUDY.
12366 APTIC NO. 30047

DISTRIBUTION OF POLLUTION AT SOME COUNTRY SITES.
12425 APTIC NO. 29582

SCAVENGING OF TRACER IN SEVERE STORMS.
12417 APTIC NO. 29691

SCAVENGING OF SOLUBLE DYE PARTICLES BY RAIN.
12414 APTIC NO. 29708

ATMOSPHERIC DISPERSION OF STACK EFFLUENTS.
12458 APTIC NO. 29773

ESTIMATION OF GROUND LEVEL CONCENTRATION BY SMOKE-DIFFUSION WIND TUNNELS.
12462 APTIC NO. 29820

RELATION BETWEEN INDUSTRIALIZATION AND THE DISTRIBUTION AND GROWTH OF EPIPHYTIC LICHENS AND MOSSES IN MONTREAL.
12602 APTIC NO. 29998

CORROSION RATES OF MILD STEEL IN COASTAL, INDUSTRIAL, AND INLAND AREAS OF NORTHERN CALIFORNIA.
12620 APTIC NO. 28810

FILTER FABRICS

DETERMINATION OF LEAD CONTENTS IN AUTOMOBILE EXHAUST GAS.
12013 APTIC NO. 29661

A NEW ENVIRONMENTAL POLLUTANT - POLYCHLORINATED BIPHENYLS (PCB).
12044 APTIC NO. 29984

PARTICLE CAPTURE MECHANISMS IN FIBROUS FILTERS.
12214 APTIC NO. 29324

DUST COLLECTOR FOR ELECTRIC FURNACE MANUFACTURING FERROALLOY.
12123 APTIC NO. 29481

A NEW FILTER FOR SUSPENDED MATTER WITH HIGH COLLECTION EFFICIENCY AND LOW FLOW RESISTANCE.
12231 APTIC NO. 29578

COLLECTION EFFICIENCIES OF GLASS FIBER FILTERS FOR EACH SIZE OF LEAD AEROSOLS.
12140 APTIC NO. 29664

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

FILTRATION OF MULTI-DISPERSING AEROSOL UNDER THE FORCE OF GRAVITY.
12115 APTIC NO. 29730

EFFICIENCY OF FILTERS FOR RADIOACTIVE AEROSOL.
12155 APTIC NO. 29768

BAGHOUSE OPERATION AT THE WHITING, INDIANA PLANT OF THE FEDERATED METALS DIVISION AMERICAN SMELTING AND REFINING COMPANY.
12107 APTIC NO. 29772

PROGRESS IN DEDUSTING TECHNIQUE IN CEMENT WORKS.
12125 APTIC NO. 29830

ACID MIST PRECIPITATOR MADE OF TEFLON FIBER.
12061 APTIC NO. 29833

REPORT ON THE INVESTIGATION INTO THE MAINTENANCE AND THE SUPERVISION OF AIR-CLEANING APPARATUS AS AN INDICATION OF AIR POLLUTION.
12122 APTIC NO. 29840

PERFORMANCE OF CHARCOAL-IMPREGNATED FILTER PAPER TYPE CP-20 FOR COLLECTING AIRBORNE RADIOIODINE.
12185 APTIC NO. 29870

ON A DUST-COLLECTING DEVICE FOR A FERROSILICON FURNACE.
12219 APTIC NO. 30086

TFE-FLUOROCARBON FIBER FILTER BAGS--IT COSTS MORE TO GO FIRST CLASS.
12109 APTIC NO. 30121

A MEASUREMENT GRID FOR AIR POLLUTION IN THE MOUTH OF THE RIVER RHINE IN ROTTERDAM.
12333 APTIC NO. 29460

DETERMINATION OF A DOCTRINE FOR VALID SAMPLING.
12273 APTIC NO. 29560

AN ASPIRATION INSTALLATION OF HIGH EFFICIENCY FOR COLLECTING SAMPLES OF RADIOACTIVE AEROSOLS FROM THE ATMOSPHERE.
12318 APTIC NO. 29670

OXIDATION OF NITROGEN MONOXIDE.
12320 APTIC NO. 29676

POROUS ANALYTICAL FILTERS AND THEIR USE IN AIR HYGIENE.
12346 APTIC NO. 29784

A SHORT TERM DETERMINATION OF BENZO(A)PYRENE AND BENZO(K) FLUORANTHENE IN AIR POLLUTANTS.
12319 APTIC NO. 29965

ELECTROSTATIC FILTER USING DIELECTRIC FILTER MATERIAL.
12515 APTIC NO. 29596

FILTERS

CONSIDERATIONS IN THE CONSTRUCTION OF LARGE REFUSE INCINERATORS.
12026 APTIC NO. 29547

DETERMINATION OF LEAD CONTENTS IN AUTOMOBILE EXHAUST GAS.
12013 APTIC NO. 29661

CEMENT DUST AT GREAT BRITAIN.
12001 APTIC NO. 29832

A NEW ENVIRONMENTAL POLLUTANT - POLYCHLORINATED BIPHENYLS (PCB).
12044 APTIC NO. 29984

ONE ANSWER TO PLASTICIZER POLLUTION.
11991 APTIC NO. 30028

MEASUREMENT DATA OBTAINED FROM EXPERIMENTS WITH THE DYNAVANE HIGH CAPACITY DRY TYPE DUST SEPARATOR.
12108 APTIC NO. 28791

PARTICLE CAPTURE MECHANISMS IN FIBROUS FILTERS.
12214 APTIC NO. 29324

DUST COLLECTOR FOR ELECTRIC FURNACE MANUFACTURING FERROALLOY.
12123 APTIC NO. 29481

MODERN DUST CONTROL.
12217 APTIC NO. 29486

POLLUTION CONTROL SYSTEMS FOR ASPHALT PLANTS.
12233 APTIC NO. 29492

EXHAUST GAS CLEANER FOR DIESEL ENGINES.
12221 APTIC NO. 29533

A NEW FILTER FOR SUSPENDED MATTER WITH HIGH COLLECTION EFFICIENCY AND LOW FLOW RESISTANCE.
12231 APTIC NO. 29578

DESULFURIZATION OF LIQUEFIED PROPANE GAS. MOLECULAR SIEVE PROCESS.
12053 APTIC NO. 29617

POLLUTION TECHNOLOGY--WHAT THEY RE DOING OVERSEAS.
12244 APTIC NO. 29650

COLLECTION EFFICIENCIES OF GLASS FIBER FILTERS FOR EACH SIZE OF LEAD AEROSOLS.
12140 APTIC NO. 29664

ENVIRONMENTAL POLLUTION CONTROL MEASURES IN WEST EUROPE AND PROBLEMS OF CARBIDE ELECTRIC FURNACE DUST IN JAPAN.
12073 APTIC NO. 29675

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

DEVELOPMENT OF A NEW DUST COLLECTOR.
12056 APTIC NO. 29686

TECHNOLOGY RENDERS ITS SERVICES TO AIR PURIFICATION AND NOISE SUPPRESSION AS PART OF ENVIRONMENTAL HYGIENE.
12227 APTIC NO. 29725

FILTRATION OF MULTI-DISPERSING AEROSOL UNDER THE FORCE OF GRAVITY.
12115 APTIC NO. 29730

EFFICIENCY OF FILTERS FOR RADIOACTIVE AEROSOL.
12155 APTIC NO. 29768

BAGHOUSE OPERATION AT THE WHITING, INDIANA PLANT OF THE FEDERATED METALS DIVISION AMERICAN SMELTING AND REFINING COMPANY.
12107 APTIC NO. 29772

PROGRESS IN DEDUSTING TECHNIQUE IN CEMENT WORKS.
12125 APTIC NO. 29830

ACID MIST PRECIPITATOR MADE OF TEFLON FIBER.
12061 APTIC NO. 29833

REPORT ON THE INVESTIGATION INTO THE MAINTENANCE AND THE SUPERVISION OF AIR-CLEANING APPARATUS AS AN INDICATION OF AIR POLLUTION.
12122 APTIC NO. 29840

PERFORMANCE OF CHARCOAL-IMPREGNATED FILTER PAPER TYPE CP-20 FOR COLLECTING AIRBORNE RADIOIODINE.
12185 APTIC NO. 29870

SELECTION OF FILTRATION EQUIPMENT FOR SULPHUR AND POTASH PROCESSING.
12160 APTIC NO. 29902

EXHAUST GAS PURIFIER.
12179 APTIC NO. 29905

METHOD TO ARREST AND REMOVE WHITE SMOKE PRODUCED FROM MOLTEN ZINC PLATING PROCESS.
12135 APTIC NO. 29940

THE PROBLEM OF INDUSTRIAL DUST: WAYS TO REGULATE ITS COLLECTION.
12099 APTIC NO. 29990

FACTORS TO CONSIDER IN SELECTING AIR POLLUTION CONTROL EQUIPMENT.
12195 APTIC NO. 29996

STUDIES OF VENTILATORY MEASURES INDOORS AGAINST POLLEN ALLERGY.
12116 APTIC NO. 30011

AIR FILTRATION SYSTEM FOR ELECTRIC FURNACE SWITCH GEAR AT LUKENS STEEL.
12065 APTIC NO. 30018

ON A DUST-COLLECTING DEVICE FOR A FERROSILICON FURNACE.
12219 APTIC NO. 30086

FIRST RESULTS WITH THE M.A.N. EXPERIMENTAL GAS TURBINE FOR COMMERCIAL VEHICLES.
12131 APTIC NO. 30088

ANNUAL SURVEY ON CUPOLA FURNACES, SEQUENCE EIGHT.
12101 APTIC NO. 30101

FILTER FOR COLLECTING CARBON BLACK.
12130 APTIC NO. 30104

AIR POLLUTION DERIVING FROM HEATING PLANTS AND INDUSTRIAL PROCESSES AND ITS CONTROL.
12229 APTIC NO. 30106

LOSS OF MERCURY FROM CHLORALKALI PLANTS.
12120 APTIC NO. 30117

TFE-FLUOROCARBON FIBER FILTER BAGS--IT COSTS MORE TO GO FIRST CLASS.
12109 APTIC NO. 30121

LEAD SMELTING PLANT CONTROLS AIR EMISSIONS.
12069 APTIC NO. 30124

A MEASUREMENT GRID FOR AIR POLLUTION IN THE MOUTH OF THE RIVER RHINE IN ROTTERDAM.
12333 APTIC NO. 29460

THE IMPORTANCE OF AGGREGATION PHENOMENA IN THE QUANTITATIVE ESTIMATE OF DUST IN THE AIR.
12354 APTIC NO. 29549

THE PROBLEM OF REPRESENTATIVE SAMPLING. CONDITIONS FOR CORRECT USE OF AN APPARATUS FOR SAMPLING.
12252 APTIC NO. 29557

DETERMINATION OF A DOCTRINE FOR VALID SAMPLING.
12273 APTIC NO. 29560

NEW METHODS OF DETERMINING AIR POLLUTION.
12316 APTIC NO. 29595

AN ASPIRATION INSTALLATION OF HIGH EFFICIENCY FOR COLLECTING SAMPLES OF RADIOACTIVE AEROSOLS FROM THE ATMOSPHERE.
12318 APTIC NO. 29670

OXIDATION OF NITROGEN MONOXIDE.
12320 APTIC NO. 29676

APPLICATION OF FLUORIMETRY IN SMOKE MEASUREMENT.
12280 APTIC NO. 29704

MEASUREMENT OF GASEOUS AND PARTICULATE FLUORINE EMISSIONS.
12322 APTIC NO. 29738

DETERMINATION OF THE SOOT INDEX IN WASTE GASES OF OIL BURNERS.
12257 APTIC NO. 29749

SIMPLIFIED TECHNIQUES IN AIR POLLUTION MEASUREMENT.
12289 APTIC NO. 29771

POROUS ANALYTICAL FILTERS AND THEIR USE IN AIR HYGIENE.
12346 APTIC NO. 29784

DETERMINATION OF RUTIN AEROSOL IN THE AIR.
12329 APTIC NO. 29806

TESTS WITH A SAMPLING AND MEASUREMENT METHOD FOR ROUTINE DETERMINATION OF FLUORINE IN THE LOWER ATMOSPHERE.
12262 APTIC NO. 29887

A SHORT TERM DETERMINATION OF BENZO(A)PYRENE AND BENZO(K) FLUORANTHENE IN AIR POLLUTANTS.
12319 APTIC NO. 29965

A COMPUTERIZED METHOD FOR SIZE CHARACTERIZATION OF ATMOSPHERIC AEROSOLS BY THE SCANNING ELECTRON MICROSCOPE.
12266 APTIC NO. 30019

TENTATIVE METHOD OF ANALYSIS FOR DUSTFALL FROM THE ATMOSPHERE.
12344 APTIC NO. 30119

THE 3,4-BENZPYRENE CONTENT OF THE AIR IN TWO INDUSTRIAL AREAS.
12400 APTIC NO. 29586

REPORT FROM THE NETHERLANDS: MEASUREMENT GRID FOR AIR POLLUTION.
12364 APTIC NO. 29798

FORMATION OF PARTICLES BY PHOTOLYSIS AND RADIOLYSIS.
12407 APTIC NO. 29809

ELECTROSTATIC FILTER USING DIELECTRIC FILTER MATERIAL.
12515 APTIC NO. 29596

PULMONARY CHANGES IN 7000 MICE FOLLOWING PROLONGED EXPOSURE TO AMBIENT AND FILTERED LOS ANGELES AIR.
12551 APTIC NO. 29763

HOW EMISSION CONTROL AFFECTS MELTING COSTS.
12628 APTIC NO. 29879

ON EXAMPLE OF PRACTICAL APPLICATION OF DUST COLLECTOR FOR ELECTRIC FURNACE FOR FERRO-ALLOY.
12632 APTIC NO. 29892

VALUE ANALYSIS OF COAL.
12629 APTIC NO. 30122

FIRING METHODS

COMBUSTION REGULARITY A KEY TO SPARK-IGNITION ENGINE EMISSIONS REDUCTION? Preprint, Academia R. P. R., Bucharest, 15p., 1970. 4 refs. (Presented at the Internal Combustion Engines Conference, 2nd International, Bucharest (Rumania), 1970.)
12023 APTIC NO. 27641

CONSIDERATIONS IN THE CONSTRUCTION OF LARGE REFUSE INCINERATORS.
12026 APTIC NO. 29547

PROBLEMS OF AERATION OF THE CRANKCASE OF RECIPROCATING ENGINES WITH AN OTTO WORK CYCLE.
12009 APTIC NO. 29721

EMISSION OF AIR POLLUTANTS FROM AIRCRAFT JET ENGINES.
12035 APTIC NO. 29734

SELF-IGNITION OF GASEOUS FUELS THROUGH THE HEATING EFFECT OF A WAST GAS STREAM.
11998 APTIC NO. 29739

EXPERIMENTAL STUDY ON PLASTICS INCINERATION.
12017 APTIC NO. 29841

STUDY OF THE COMBUSTION OF PARTLY PRE-MIXED LAMINAR NATURAL GAS FLAMES.
12021 APTIC NO. 29948

TAKING ANOTHER LOOK BEFORE WE TAKE THE LEAD OUT.
11997 APTIC NO. 30067

THE SE-DUCT--AN IDEAL SOLUTION FOR GAS HEATERS.
12002 APTIC NO. 30132

MEASUREMENT DATA OBTAINED FROM EXPERIMENTS WITH THE DYNAVANE HIGH CAPACITY DRY TYPE DUST SEPARATOR.
12108 APTIC NO. 28791

CARBON MONOXIDE AS A COMBUSTION CONTROL PARAMETER.
12072 APTIC NO. 29471

EXPERIMENTS CONCERNING STOICHIOMETRIC COMBUSTION IN OIL-FIRED FURNACES OF FRENCH POWER PLANTS.
12090 APTIC NO. 29513

VENTILATION AND EXPLOSION EXPERIMENTS IN A WATER-TUBE BOILER OF A POWER PLANT.
12091 APTIC NO. 29514

AIR POLLUTION: CONTROLLED OPERATION OF A NSSC RECOVERY FURNACE.
12127 APTIC NO. 29621

EMISSION CONTROL BY EXHAUST MANIFOLD REACTOR--AN INITIAL STUDY FOR SMALL ENGINES.
12163 APTIC NO. 29629

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

EXHAUST SYSTEM.
12165 APTIC NO. 29723

DEVELOPMENT OF GAS PURIFICATION INSTALLATIONS FOR ELECTRIC MELTING FURNACES.
12204 APTIC NO. 29740

GASIFICATION OF HYDROCARBONS.
12137 APTIC NO. 29779

CALCULATION OF EXCESS AIR FOR COMBUSTION PROCESSES USING O2-TO-N2 RATIO.
12176 APTIC NO. 29796

MODERN OIL BURNING TECHNOLOGY AS DISPLAYED ON THE INTHERM IN STUTTGART AND THE 6.ISH IN FRANKFURT 1971.
12187 APTIC NO. 29824

AIR POLLUTION TEST METHODS COMPARED IN INCINERATOR EVALUATION PROGRAM.
12119 APTIC NO. 29837

EXPERIMENTAL RESEARCH ON LOW EXCESS AIR COMBUSTION IN BOILER BURNING HEAVY OIL ONLY.
12142 APTIC NO. 29860

ATTEMPT AT A THERMODYNAMIC SOLUTION: AUTOMOBILE EXHAUST GASES.
12147 APTIC NO. 29906

STUDIES ON AIR POLLUTION CONTROL BY ADDITIVE INJECTION. PART II - PREVENTION OF CLOGGING AT HIGH TEMPERATURE HEATING SURFACE OF BOILER BY ADDING MG(OH)2 POWDER.
12075 APTIC NO. 29941

HIGH-CONCENTRATION SULFUR DIOXIDE FROM CALCINING PYRITES IN THE DKSM FURNACE.
12157 APTIC NO. 29982

COMBUSTION OF WASTES CENTERING AROUND REMOVAL OF NOXIOUS GAS.
12077 APTIC NO. 29985

CONTROL OF POLLUTANT EMISSION AND SULPHURIC ACID CORROSION FROM COMBUSTION OF RESIDUAL FUEL OIL. PART I: LOW-PRESSURE HEATING BOILERS WITH MECHANICAL ATOMIZING BURNERS.
12164 APTIC NO. 30055

LOW POWER HOUSEHOLD OIL BURNING INSTALLATIONS. HOW THEY FUNCTION, PROPOSAL FOR A METHOD OF REGULATING THEM.
12079 APTIC NO. 30108

NO-X CONTROL FROM STATIONARY SOURCES.
12427 APTIC NO. 29764

FLAME AFTERBURNERS

POLLUTION TECHNOLOGY--WHAT THEY RE DOING OVERSEAS.
12244 APTIC NO. 29650

GASIFICATION OF HYDROCARBONS.
12137 APTIC NO. 29779

FUME INCINERATION: EFFECTIVE, EFFICIENT.
12100 APTIC NO. 30077

FLAME IONIZATION DETECTOR

THE EXHAUST GAS COMPOSITION AT THE FM GASOLINE ENGINE.
12046 APTIC NO. 29516

A PROGRAM TO SAMPLE AND ANALYZE AIR POLLUTION IN THE VICINITY OF A CHEMICAL RECLAMATION PLANT.
12039 APTIC NO. 29698

THE MEASUREMENT OF ATMOSPHERIC POLLUTION IN GERMANY.
12340 APTIC NO. 29066

NEW METHODS OF DETERMINING AIR POLLUTION.
12316 APTIC NO. 29595

ENVIRONMENTAL POLLUTION AND ITS MEASUREMENTS (II).
12338 APTIC NO. 29843

FLAME PHOTOMETRIC DETECTION OF VOLATILE SULPHUR COMPOUNDS IN SMOKE FROM VARIOUS TYPES OF CIGARETTES.
12283 APTIC NO. 29874

GAS CHROMATOGRAPHIC ANALYSIS OF BENZENE AND TOLUENE IN AUTOMOBILE EXHAUST GAS.
12295 APTIC NO. 29907

AUTOMATED ANALYSIS SYSTEMS MAKES KRAFT EMISSION MEASUREMENTS EASY.
12325 APTIC NO. 29913

GAS CHROMATOGRAPHIC ANALYSIS OF TRACES OF CO AND CO2.
12326 APTIC NO. 29938

GAS CHROMATOGRAPHY OF REACTIVE SULFUR GASES IN AIR AT THE PARTS- PER-BILLION LEVEL.
12347 APTIC NO. 30065

THE GAS CHROMATOGRAPHIC DETERMINATION OF PESTICIDES. (PART 3) DETERMINATION OF RESIDUES OF ORGANOPHOSPHORUS PESTICIDES.
12349 APTIC NO. 30134

EXPERIMENT ON PHOTOCHEMICAL REACTION OF MOTOR EXHAUST GAS.
12469 APTIC NO. 29500

FLOWERS

ON DAMAGE TO PLANTS BY FLUORIDES IN EXHAUST GAS FROM TILE MANUFACTURING FACTORY.
12606 APTIC NO. 29597

COLLECTED PHOTOGRAPHS DEMONSTRATING PLANT DAMAGE BY AIR POLLUTION.
12591 APTIC NO. 29924

FLUID FLOW

RECENT TREND AND PROBLEMS OF INDUSTRIAL WASTES TREATING EQUIPMENT.
12041 APTIC NO. 29827

MEASUREMENT DATA OBTAINED FROM EXPERIMENTS WITH THE DYNAVANE HIGH CAPACITY DRY TYPE DUST SEPARATOR.
12108 APTIC NO. 28791

PARTICLE CAPTURE MECHANISMS IN FIBROUS FILTERS.
12214 APTIC NO. 29324

UTILIZATION OF CATALYST IN AIR POLLUTION CONTROL (4).
12239 APTIC NO. 29477

ADSORPTION OF SULFUR DIOXIDE GAS BY ACTIVATED CARBON OR MOLECULAR SIEVE.
12201 APTIC NO. 29497

A NEW FILTER FOR SUSPENDED MATTER WITH HIGH COLLECTION EFFICIENCY AND LOW FLOW RESISTANCE.
12231 APTIC NO. 29578

PERFORMANCE OF CYCLONE FOR LOW-PRESSURE AIR FLOW.
12182 APTIC NO. 29728

BAGHOUSE OPERATION AT THE WHITING, INDIANA PLANT OF THE FEDERATED METALS DIVISION AMERICAN SMELTING AND REFINING COMPANY.
12107 APTIC NO. 29772

PRINCIPLES OF COLLECTING PARTICULATES: DRY, WET OR ELECTROSTATICALLY.
12232 APTIC NO. 29838

REPORT ON THE INVESTIGATION INTO THE MAINTENANCE AND THE SUPERVISION OF AIR-CLEANING APPARATUS AS AN INDICATION OF AIR POLLUTION.
12122 APTIC NO. 29840

EXPERIMENTAL RESEARCH ON LOW EXCESS AIR COMBUSTION IN BOILER BURNING HEAVY OIL ONLY.
12142 APTIC NO. 29860

PERFORMANCE OF CHARCOAL-IMPREGNATED FILTER PAPER TYPE CP-20 FOR COLLECTING AIRBORNE RADIOIODINE.
12185 APTIC NO. 29870

EQUALIZATION OF PARTICLE TRANSFER IN TRANSFERABLE STRATUM.
12144 APTIC NO. 29928

INVESTIGATION OF HEAVY OIL DESULFURIZATION IN FIXED-BED CONTACT REACTORS.
12196 APTIC NO. 29931

CONTACT HYDRODESULFURIZATION OF PETROLEUM RESIDUAL OIL.
12200 APTIC NO. 29932

RESISTANCE OF PHASES INVOLVED IN MASS TRANSFER DURING ABSORPTION OF A READILY SOLUBLE GAS IN A VENTURI SCRUBBER.
12188 APTIC NO. 29968

ON THE REACTIVITY OF AMINES WITH OZONE.
12190 APTIC NO. 29978

COMBUSTION OF WASTES CENTERING AROUND REMOVAL OF NOXIOUS GAS.
12077 APTIC NO. 29985

REACTOR DEVICE FOR HEAVY OIL DESULFURIZATION.
12149 APTIC NO. 29987

ELIMINATION OF OXIDES CONTAINED IN CERTAIN RESIDUAL INDUSTRIAL GASES.
12129 APTIC NO. 30043

PROCESS FOR REMOVING SULPHUR FROM GASES.
12139 APTIC NO. 30049

ON DOUBLE HEAD-CUT CONES TYPE CENTRIFUGAL DUST COLLECTOR.
12148 APTIC NO. 30070

ON A DUST-COLLECTING DEVICE FOR A FERROSILICON FURNACE.
12219 APTIC NO. 30086

FILTER FOR COLLECTING CARBON BLACK.
12130 APTIC NO. 30104

QUANTITATIVE ANALYSIS OF NO IN ATMOSPHERE - ON CHANGES IN SALTZMAN COEFFICIENT WITH CHANGE IN COMPOSITION OF SALTZMAN REAGENTS.
12308 APTIC NO. 29480

AN ASPIRATION INSTALLATION OF HIGH EFFICIENCY FOR COLLECTING SAMPLES OF RADIOACTIVE AEROSOLS FROM THE ATMOSPHERE.
12318 APTIC NO. 29670

OXIDATION OF NITROGEN MONOXIDE.
12320 APTIC NO. 29676

INVESTIGATION OF ACTIVATION ANALYSIS OF TRACE MERCURY IN GAS BY RADIOISOTOPE TRACER METHOD.
12328 APTIC NO. 29770

PRODUCTION OF GASES OF KNOWN SPECIFIC ACTIVITY IN A REACTOR FOR CALIBRATING GASEOUS EFFLUENT MONITORS.
12264 APTIC NO. 29848

CIGARETTE SMOKING: OBJECTIVE EVIDENCE FOR LUNG DAMAGE IN TEEN-AGERS.
12342 APTIC NO. 30097

COLLECTION EFFICIENCY IN WASHOUT BY RAIN.
12406 APTIC NO. 29710

ATMOSPHERIC DISPERSION OF STACK EFFLUENTS.
12458 APTIC NO. 29773

ATTACHMENT OF TRACE SUBSTANCES ON ATMOSPHERIC AEROSOLS.
12409 APTIC NO. 30046

SCALE-UP OF LABORATORY FLUID-BED DATA: THE SIGNIFICANCE OF SLUG FLOW.
12501 APTIC NO. 29494

ON ADHESION OF SMOKE MIST PARTICULATES FLOWING THROUGH BETWEEN PLAN PARALLEL PLATES.
12518 APTIC NO. 29729

REDUCTION OF MAGNESIUM SULPHATE BY CARBON MONOXIDE.
12498 APTIC NO. 29943

THE ABSORPTION COEFFICIENT OF A GASEOUS SUBSTANCE ON A SWARMING FILM.
12479 APTIC NO. 29994

CALCULATION OF A JET AXIS IN A DRIFTING FLOW.
12507 APTIC NO. 30042

ADHESION TO PIPE S WALL WITH AEROSOL PARTICLES FLOWING IN A PIPE AS TURBULENT FLOW.
12523 APTIC NO. 30071

SHAPE FACTORS FOR AIRBORNE PARTICLES.
12503 APTIC NO. 30085

ATMOSPHERIC CORROSION OF SILVER.
12614 APTIC NO. 29951

FLUORANTHENES

STUDY OF POLYCYCLIC HYDROCARBONS FIXED ON ATMOSPHERIC DUSTS.
12270 APTIC NO. 29851

A SHORT TERM DETERMINATION OF BENZO(A)PYRENE AND BENZO(K) FLUORANTHENE IN AIR POLLUTANTS.
12319 APTIC NO. 29965

FLUORESCENCE

TENTATIVE METHOD OF ANALYSIS FOR BERYLLIUM CONTENT OF ATMOSPHERIC PARTICULATE MATTER.
12307 APTIC NO. 29487

NEW METHODS OF DETERMINING AIR POLLUTION.
12316 APTIC NO. 29595

MEASURING METHOD OF OZONE BY CHEMILUMINECENCE.
12337 APTIC NO. 29665

APPLICATION OF FLUORIMETRY IN SMOKE MEASUREMENT.
12280 APTIC NO. 29704

FLUOROMETRIC DETERMINATION OF BROMINE: APPLICATION TO MEASUREMENT OF BROMINE AEROSOLS.
12255 APTIC NO. 29811

A SHORT TERM DETERMINATION OF BENZO(A)PYRENE AND BENZO(K) FLUORANTHENE IN AIR POLLUTANTS.
12319 APTIC NO. 29965

LASER-INDUCED VIBRATIONAL FLUORESCENCE IN NITROUS OXIDE.
12472 APTIC NO. 28910

QUENCHING OF NAPHTHALENE LUMINESCENCE BY OXYGEN AND NITRIC OXIDE.
12495 APTIC NO. 29611

RATES OF ENERGY TRANSFER FROM N2 A CUBED SIGMA(+) U TO VARIOUS MOLECULES. INITIAL AND FINAL QUANTUM STATES IN THE TRANSFER TO NOX SQUARED PI AND HG(6 1S SUB O), AND VIBRATIONAL RELAXATION OF N2 A CUBED SIGMA(+) U (V EQUALS 1) IN HELIUM.
12481 APTIC NO. 29750

SPECTROSCOPIC STUDIES OF PORPHYRINS, PHTHALOCYANINES, AND CS2 IN INERT MATRICES.
12471 APTIC NO. 30050

INTERNAL CONVERSION IN BENZENE, BENZENE-D6, AND SULFUR DIOXIDE.
12508 APTIC NO. 30063

FLUORIDES

PHYSICAL-CHEMICAL PROBLEMS OF AIR POLLUTION.
11996 APTIC NO. 29786

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

MEASUREMENT OF GASEOUS AND PARTICULATE FLUORINE EMISSIONS.
12322 APTIC NO. 29738

SIMPLIFIED TECHNIQUES IN AIR POLLUTION MEASUREMENT.
12289 APTIC NO. 29771

A METER FOR THE SITE DETERMINATION OF HYDROLYSABLE FLUORIDES IN SULPHUR HEXAFLUORIDE.
12336 APTIC NO. 30007

DETERMINATION AND EVALUATION OF LOW CONCENTRATIONS OF INDUSTRIAL AIR POLLUTANTS.
12309 APTIC NO. 30014

MOLECULAR ORBITAL STUDY OF NH2, NO2, AND NF2.
ERROR

TWO OBSERVATIONS IN A FLUORSPAR QUARRY.
12535 APTIC NO. 29565

BIOLOGICAL MONITORING GUIDES. FLUORIDES.
12525 APTIC NO. 29807

ON DAMAGE TO PLANTS BY FLUORIDES IN EXHAUST GAS FROM TILE MANUFACTURING FACTORY.
12606 APTIC NO. 29597

METABOLIC EFFECTS OF ATMOSPHERIC FLUORIDES ON PLANTS.
12605 APTIC NO. 29616

DAMAGE TO PLANTS BY AIR POLLUTANTS.
12603 APTIC NO. 29746

COLLECTION OF LEGISLATIONS RELATED WITH MITI CONCERNING POLLUTIONS.
12646 APTIC NO. 29504

AIR POLLUTION--THE STATUS TODAY.
12681 APTIC NO. 28923

FLUORINE

TECHNOLOGY RENDERS ITS SERVICES TO AIR PURIFICATION AND NOISE SUPPRESSION AS PART OF ENVIRONMENTAL HYGIENE.
12227 APTIC NO. 29725

EXPERIENCES WITH FLUORINE EMISSION MEASUREMENTS.
12290 APTIC NO. 29737

MEASUREMENT OF GASEOUS AND PARTICULATE FLUORINE EMISSIONS.
12322 APTIC NO. 29738

AUTOMATIC MEASURING APPARATUS OF FLUORIDE GASSES IN AIR.
12299 APTIC NO. 29966

CHEMICAL PROCESSES AT THE AIR-SEA INTERFACE: THE BEHAVIOR OF FLUORINE.
12468 APTIC NO. 30126

THE EFFECTS OF LOW LEVEL FLUORINE POLLUTION IN A MOUNTAIN VALLEY.
12595 APTIC NO. 29991

THE COSTS FOR MAINTENANCE OF CLEAN AIR. THE INFLUENCE OF SOCIAL COSTS ON THE SELECTION OF AN INDUSTRIAL SITE.
12633 APTIC NO. 29923

PRESENT SITUATION OF ADMINISTRATION CONCERNING POLLUTIONS.
12648 APTIC NO. 29598

MATERIALS FOR REFERENCE ABOUT ENVIRONMENTAL POLLUTION CONTROL.
12651 APTIC NO. 29818

FLUORINE COMPOUNDS

THE INFLUENCE OF ENVIRONMENTAL PROTECTION ON PLANNING, OPERATION AND ECONOMY OF STEAM POWER PLANTS. I. MAINTENANCE OF CLEAN AIR.
12036 APTIC NO. 29519

PHYSICAL-CHEMICAL PROBLEMS OF AIR POLLUTION.
11996 APTIC NO. 29786

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

TFE-FLUOROCARBON FIBER FILTER BAGS-IT COSTS MORE TO GO FIRST CLASS.
12109 APTIC NO. 30121

EXAMINATION OF QUANTITATIVE ANALYSIS METHOD OF FLUORINE IN VEGETABLE SAMPLES.
12302 APTIC NO. 29467

EXPERIENCES WITH FLUORINE EMISSION MEASUREMENTS.
12290 APTIC NO. 29737

MEASUREMENT OF GASEOUS AND PARTICULATE FLUORINE EMISSIONS.
12322 APTIC NO. 29738

SIMPLIFIED TECHNIQUES IN AIR POLLUTION MEASUREMENT.
12289 APTIC NO. 29771

A METER FOR THE SITE DETERMINATION OF HYDROLYSABLE FLUORIDES IN SULPHUR HEXAFLUORIDE.
12336 APTIC NO. 30007

DETERMINATION AND EVALUATION OF LOW CONCENTRATIONS OF INDUSTRIAL AIR POLLUTANTS.
12309 APTIC NO. 30014

TRACE ELEMENTS IN ATMOSPHERIC PRECIPITATION AROUND THE OTKAZNOE RESERVOIR.
12432 APTIC NO. 29910

MOLECULAR ORBITAL STUDY OF NH2, NO2, AND NF2.
ERROR

TWO OBSERVATIONS IN A FLUORSPAR QUARRY.
12535 APTIC NO. 29565

BIOLOGICAL MONITORING GUIDES. FLUORIDES.
12525 APTIC NO. 29807

ON DAMAGE TO PLANTS BY FLUORIDES IN EXHAUST GAS FROM TILE MANUFACTURING FACTORY.
12606 APTIC NO. 29597

METABOLIC EFFECTS OF ATMOSPHERIC FLUORIDES ON PLANTS.
12605 APTIC NO. 29616

PROBLEMS OF FLUORINE EMISSION MEASUREMENTS.
12608 APTIC NO. 29736

DAMAGE TO PLANTS BY AIR POLLUTANTS.
12603 APTIC NO. 29746

THE EFFECTS OF LOW LEVEL FLUORINE POLLUTION IN A MOUNTAIN VALLEY.
12595 APTIC NO. 29991

COLLECTION OF LEGISLATIONS RELATED WITH MITI CONCERNING POLLUTIONS.
12646 APTIC NO. 29504

AIR POLLUTION--THE STATUS TODAY.
12681 APTIC NO. 28923

FLUOROSIS

BIOLOGICAL MONITORING GUIDES. FLUORIDES.
12525 APTIC NO. 29807

THE EFFECTS OF LOW LEVEL FLUORINE POLLUTION IN A MOUNTAIN VALLEY.
12595 APTIC NO. 29991

FLY ASH

THE INFLUENCE OF ENVIRONMENTAL PROTECTION ON PLANNING, OPERATION AND ECONOMY OF STEAM POWER PLANTS. I. MAINTENANCE OF CLEAN AIR.
12036 APTIC NO. 29519

CONSIDERATIONS IN THE CONSTRUCTION OF LARGE REFUSE INCINERATORS.
12026 APTIC NO. 29547

INCINERATOR DESIGNED TO ANTICIPATE PROBLEMS.
11994 APTIC NO. 29669

CAUSES, MEASUREMENT AND LIMITATION OF PARTICULATE EMISSION FROM OIL-FIRED STEAM BOILERS.
12080 APTIC NO. 30021

AIR POLLUTION TEST METHODS COMPARED IN INCINERATOR EVALUATION PROGRAM.
12119 APTIC NO. 29837

THE PROBLEM OF INDUSTRIAL DUST: WAYS TO REGULATE ITS COLLECTION.
12099 APTIC NO. 29990

ATMOSPHERIC REACTIONS AND SCAVENGING PROCESSES.
12426 APTIC NO. 29774

COMPLEX ALKALI IRON SULFATES A CONTRIBUTION TO THE THERMODYNAMICS OF FIRESDIDE HIGH-TEMPERATURE CORROSION.
12616 APTIC NO. 29783

FOG

A COMPREHENSIVE SAMPLING SYSTEM FOR STUDYING THE RELATION BETWEEN VISIBILITY, METEOROLOGICAL PARAMETERS AND ATMOSPHERIC POLLUTION.
12276 APTIC NO. 30082

FORMATION OF FOG ON THE NUCLEI OF HUMIDITY CONDENSATION.
12453 APTIC NO. 29636

FOOD AND FEED OPERATIONS

SOME PROBLEMS ON THE OFFENSIVE ODOR IN HYOGO PREFECTURE.
12030 APTIC NO. 29842

PROBLEM OF OBNOXIOUS ODOR IN INDUSTRIAL POLLUTIONS.
12202 APTIC NO. 29745

ON MEASUREMENT OF ODOR.
12256 APTIC NO. 29726

FOODS

CANCER MORTALITY IN RELATION TO NATIONAL CONSUMPTION OF CIGARETTES, SOLID FUEL, TEA AND COFFEE.
12585 APTIC NO. 29608

FORESTS

AIR POLLUTION.
12363 APTIC NO. 29510

THE EFFECTS OF AIR POLLUTION ON VEGETATION.
12600 APTIC NO. 30003

NEW TREND IN POLLUTIONS COUNTERMEASURES IN THE 70 S.
12660 APTIC NO. 29507

FORMALDEHYDES

AIR POLLUTION BY NITRIC OXIDE FROM FERTILIZER FACTORIES.
12051 APTIC NO. 29568

EXHAUST GAS CLEANER FOR DIESEL ENGINES.
12221 APTIC NO. 29533

ANALYSIS OF MONOETHANOLAMIN IN THE AIR.
12339 APTIC NO. 29970

PHOTOCHEMICAL REACTIONS OF MOTOR VEHICLE EXHAUST GASES.
12402 APTIC NO. 29960

THE GUIDANCE STANDARD OF THE EQUIPMENT FOR TREATING EXHAUST GASES FROM THE FACTORY (FORMALDEHYDE):APR. 1970.
12636 APTIC NO. 29756

COLLECTION OF LEGISLATIONS RELATED WITH MITI CONCERNING POLLUTIONS.
12646 APTIC NO. 29504

FRACTIONATION

FRACTIONATION OF OXYGEN ISOTOPES BETWEEN NO AND H20.
12297 APTIC NO. 30114

CHEMICAL PROCESSES AT THE AIR-SEA INTERFACE: THE BEHAVIOR OF FLUORINE.
12468 APTIC NO. 30126

FRANCE

ABOUT THE PROBLEM OF REPRESENTATIVE SAMPLING IN THE CASE OF WET SANDBLASTING.
12033 APTIC NO. 29542

PROCESS FOR THE SEPARATION OF SULFUR FROM GAS.
12052 APTIC NO. 29273

COMPARISON OF THE CATALYTIC ACTIVITY OF MANGANESE DIOXIDE OF ELECTROLYTIC ORIGIN AND OF MANGANESE HYDROXIDE IN THE OXIDATION OF CARBON OXIDES. IV. ADSORPTION AND DESORPTION OF THE REAGENTS AND THE PRODUCTS OF THE REACTION ON MANGANESE HYDROXIDE.
12192 APTIC NO. 29506

EXPERIMENTS CONCERNING STOICHIOMETRIC COMBUSTION IN OIL-FIRED FURNACES OF FRENCH POWER PLANTS.
12090 APTIC NO. 29513

OBSERVATIONS ON THE ELIMINATION OF DUST.
12143 APTIC NO. 29554

MEASURES TAKEN BY THE REGIONAL SOCIAL SECURITY ADMINISTRATION OF LIMOGES TO REDUCE THE RISKS OF SILICOSIS.
12171 APTIC NO. 29561

STUDY OF DUSTINESS AND PURIFICATION OF AIR IN A QUARRY.
12128 APTIC NO. 29562

DESULFURIZATION OF LIQUEFIED PROPANE GAS. MOLECULAR SIEVE PROCESS.
12053 APTIC NO. 29617

DUST COLLECTING SYSTEMS IN CEMENT WORKS.
12106 APTIC NO. 29831

DESULFURIZATION OF WASTE GASES AND FUELS.
12205 APTIC NO. 29957

ELIMINATION OF OXIDES CONTAINED IN CERTAIN RESIDUAL INDUSTRIAL GASES.
12129 APTIC NO. 30043

LOW POWER HOUSEHOLD OIL BURNING INSTALLATIONS. HOW THEY FUNCTION, PROPOSAL FOR A METHOD OF REGULATING THEM.
12079 APTIC NO. 30108

RECORDING DEVICE COMBINED WITH THERMAL PRECIPITATOR FOR MEASURING DUST CONTENT IN AIR.
12285 APTIC NO. 29540

APPARATUS FOR TEST PREPARATION IN VERY HUMID ATMOSPHERES AND IN PARTICULAR AT DRILLING OPERATIONS.
12253 APTIC NO. 29541

A PHOTOGRAPHIC METHOD OF DETERMINING THE EMISSION OF DUST GENERATED BY INDUSTRIAL MACHINERY.
12254 APTIC NO. 29544

COMPARISON OF VARIOUS METHODS OF DETERMINING QUARTZ CONTENT IN NOXIOUS DUST.
12263 APTIC NO. 29546

OBSERVATIONS CONCERNING THE USE OF THE A.R.M. APPARATUS AND THE POSSIBILITIES OF UTILIZING THE RESULTS FOR PREVENTIVE MEASURES.
12291 APTIC NO. 29556

THE PROBLEM OF REPRESENTATIVE SAMPLING. CONDITIONS FOR CORRECT USE OF AN APPARATUS FOR SAMPLING.
12252 APTIC NO. 29557

DETERMINATION OF A DOCTRINE FOR VALID SAMPLING.
12273 APTIC NO. 29560

GENERAL REMARKS ABOUT DUST SAMPLING.
12321 APTIC NO. 29564

STUDY OF TRACES OF HEAVY ORGANIC PRODUCTS IN FUEL COMBUSTION GASES. (Etude des traces de produits organiques lourds dans les fumees de combustion de fuel). Text in French. Rev. Gen. Thermique (Paris), 10(111):223-238, March 1971. 90 refs.
12310 APTIC NO. 29766

STUDY OF POLYCYCLIC HYDROCARBONS FIXED ON ATMOSPHERIC DUSTS.
12270 APTIC NO. 29851

PHOTON DETECTION OF LIGHT DIFFUSION WITH ULTRAFINE AEROSOLS.
12351 APTIC NO. 30038

ATMOSPHERIC POLLUTION. APPARATUS FOR MEASURING THE CONCENTRATION OF CONDENSATION NUCLEI IN THE ATMOSPHERE.
12267 APTIC NO. 30041

RESEARCH FACILITIES NECESSARY TO ADEQUATELY SUPPORT MEASUREMENT OF LOW LEVELS OF POLLUTANTS AND FOLLOW THEIR TRENDS.
12359 APTIC NO. 29050

A SUGGESTED OUTLINE FOR PROVIDING INFORMATION ON FACILITIES EXISTING IN COUNTRIES AT PILOT STATION.
12360 APTIC NO. 29055

TESTS OF REPRESENTATIVE SPECIMENS OF CRYSTALLINE SILICA CONTAINED IN THE ATMOSPHERE OF INDUSTRIAL PLANTS.
12370 APTIC NO. 29553

FORMATION OF PARTICLES BY PHOTOLYSIS AND RADIOLYSIS.
12407 APTIC NO. 29809

THE STUDY OF THE EVOLUTION OF ATOMIC SIZED PARTICLES IN THE AIR.
12436 APTIC NO. 29946

AIR POLLUTION IN AN URBAN ENVIRONMENT.
12413 APTIC NO. 30045

BORDEAUX. STUDY OF ATMOSPHERIC POLLUTION IN THE BUILT-UP AREA.
12420 APTIC NO. 30109

OBSERVATIONS ON THE FIGHT AGAINST DUST BY MEANS OF SALINE AEROSOLS.
12475 APTIC NO. 29551

INSTRUMENT FOR STUDYING THE ACTION OF EXHAUST GASES DILUTED IN THE AIR, ON BACTERIAL, CELLULAR, AND TISSULAR CULTURES.
12476 APTIC NO. 29849

A CONTRIBUTION TO THE EVALUATION OF THE RISK OF SILICOSIS.
12549 APTIC NO. 29558

TWO OBSERVATIONS IN A FLUORSPAR QUARRY.
12535 APTIC NO. 29565

CARBON MONOXIDE AS TOXIC GAS.
12538 APTIC NO. 29640

THE EFFECTS OF LOW LEVEL FLUORINE POLLUTION IN A MOUNTAIN VALLEY.
12595 APTIC NO. 29991

EFFECT OF LOW SILICIUM CONTENT AND SOME SURFACE TREATMENT ON THE OXIDATION OF CARBON STEELS IN CARBON DIOXIDE ATMOSPHERES AT MEDIUM TEMPERATURES.
12611 APTIC NO. 29995

THE ECONOMIC IMPORTANCE OF HEAT RECOVERY FROM HOUSEHOLD REFUSE INCINERATORS.
12625 APTIC NO. 29992

ATMOSPHERIC POLLUTANTS FRENCH LEGISLATION. STANDARD MEASURING METHODS. RECENT COMMERCIAL APPARATUS.
12638 APTIC NO. 29003

STATE AND INSPECTION OF PROTECTION OF ATMOSPHERE AND LEGAL REGULATIONS VALID TODAY.
12664 APTIC NO. 29828

LEGAL ASPECTS OF AIR POLLUTION IN BELGIUM AND OTHER NEIGHBORING COUNTRIES.
12659 APTIC NO. 30040

COMPARATIVE STUDY OF CERTAIN PROVISIONS IN MEMBER STATES FOR CONTROLLING AIR POLLUTION.
12656 APTIC NO. 30052

FREE RADICALS

ATMOSPHERIC REACTIONS AND SCAVENGING PROCESSES.
12426 APTIC NO. 29774

A FEW OBSERVATION ON THE GENERATION MECHANISM OF OBNOXIOUS ODOR.
12517 APTIC NO. 29649

THE REACTION OF OZONE WITH SOLID POLYSTYRENE.
12505 APTIC NO. 29666

METHANESULFENYL CHLORIDE. V. THE SPONTANEOUS DECOMPOSITION OF METHANESULFENYL CHLORIDE AND METHYLSULFUR TRICHLORIDE.
12485 APTIC NO. 29674

FREEZING

SIMPLIFIED TECHNIQUES IN AIR POLLUTION MEASUREMENT.
12289 APTIC NO. 29771

FRUITS

DEVELOPMENT OF A METEOROLOGICALLY CONTROLLED AGRICULTURAL BURNING PROGRAM.
12058 APTIC NO. 29724

EFFECT OF AIR AND WATER POLLUTION ON AGRICULTURAL PRODUCTS BY CD, PB, ZN ATTRIBUTED TO MINE REFINERY IN ANNAKA CITY, GUNMA PREFECTURE.
12601 APTIC NO. 27489

COLLECTED PHOTOGRAPHS DEMONSTRATING PLANT DAMAGE BY AIR POLLUTION.
12591 APTIC NO. 29924

FUEL ADDITIVES

OIL REFINERS PREPARE FOR ANITPOLLUTION CONTROLS.
12040 APTIC NO. 29127

THE EXHAUST GAS COMPOSITION AT THE FM GASOLINE ENGINE.
12046 APTIC NO. 29516

COMBUSTION OF WASTE OIL FROM COAL.
12043 APTIC NO. 29534

WHY LEAD IN GASOLINE? THE EFFECT OF LEAD CONTAINING ANTIKNOCK AGENTS FOR OTTO ENGINE FUELS.
11995 APTIC NO. 29782

PHYSICAL-CHEMICAL PROBLEMS OF AIR POLLUTION.
11996 APTIC NO. 29786

LEAD POLLUTION--A GROWING HAZARD TO PUBLIC HEALTH.
11999 APTIC NO. 29872

GASOLINE, LEAD AND AIR POLLUTION.
12014 APTIC NO. 30027

TAKING ANOTHER LOOK BEFORE WE TAKE THE LEAD OUT.
11997 APTIC NO. 30067

EMISSIONS FROM INTERNAL COMBUSTION ENGINE.
12225 APTIC NO. 29531

HYDROGENIZATION DESULFURIZATION METHOD OF HEAVY HC.
12189 APTIC NO. 29603

AN EXPERIMENT ON VALVE RECESSION BY NON-LEADED GASOLINE.
12222 APTIC NO. 29656

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

EFFECTS OF THE ADDITION OF BARIUM COMPOUND ON THE SMOKE CONCENTRATION OF DIESEL EXHAUST GAS.
12057 APTIC NO. 29696

UTILIZATION OF CATALYST IN AIR POLLUTION CONTROL (5).
12240 APTIC NO. 29898

STUDIES ON AIR POLLUTION CONTROL BY ADDITIVE INJECTION. PART II - PREVENTION OF CLOGGING AT HIGH TEMPERATURE HEATING SURFACE OF BOILER BY ADDING MG(OH)2 POWDER.
12075 APTIC NO. 29941

CAN ADDITIVES DECREASE DIESEL SMOKE? Power, 114(8):60, Aug. 1970.
12075 APTIC NO. 29941

COMBUSTION OF WASTES CENTERING AROUND REMOVAL OF NOXIOUS GAS.
12077 APTIC NO. 29985

GASOLINE WITHOUT LEAD. TECHNICAL POSSIBILITIES FOR A NON-LEADED FUEL.
12084 APTIC NO. 30010

CONTROL OF POLLUTANT EMISSION AND SULPHURIC ACID CORROSION FROM COMBUSTION OF RESIDUAL FUEL OIL. PART I: LOW-PRESSURE HEATING BOILERS WITH MECHANICAL ATOMIZING BURNERS.
12164 APTIC NO. 30055

STUDIES ON LEAD CHROMATE OBTAINED FROM TETRAALKYL LEAD IN LEADED GASOLINE. I. X-RAY DIFFRACTION TESTS OF THE LEAD CHROMATE CRYSTALS.
12296 APTIC NO. 29810

LEAD POLLUTION AND PHOTOCHEMICAL SMOG IN TOKYO.
12376 APTIC NO. 29647

LEAD MEN HEADING TOWARD DESTRUCTION--SPREADING OMINOUS METAL POLLUTIONS.
12569 APTIC NO. 29789

FOUR-ALKYL LEAD AND ENVIRONMENTAL POLLUTION.
12588 APTIC NO. 29825

UNLEADED GASOLINE AND SMOG-FREE AUTOS--HOW AND WHY.
12644 APTIC NO. 30035

FUEL CELLS

BUS AND VEHICLE FOR TRANSPORTATION WITH ELECTRIC DRIVE.
11987 APTIC NO. 29517

EXPERIMENTS WITH ELECTRIC VEHICLES.
11989 APTIC NO. 29886

FUEL CHARGING

STUDIES ON AIR POLLUTION CONTROL BY ADDITIVE INJECTION. PART II - PREVENTION OF CLOGGING AT HIGH TEMPERATURE HEATING SURFACE OF BOILER BY ADDING MG(OH)2 POWDER.
12075 APTIC NO. 29941

LOW POWER HOUSEHOLD OIL BURNING INSTALLATIONS. HOW THEY FUNCTION, PROPOSAL FOR A METHOD OF REGULATING THEM.
12079 APTIC NO. 30108

FUEL CRITERIA

MARKET TENDENCIES FOR LEAD AND ZINC.
12003 APTIC NO. 30001

FUEL EVAPORATION

CONTROL OF ATMOSPHERIC EMISSIONS FROM PETROLEUM STORAGE TANKS.
12063 APTIC NO. 29889

IT BEGAN WITH THE SMOG IN CALIFORNIA. CALIFORNIA TEST, EUROPEAN TEST--INTERNATIONAL REGULATIONS OF AUTOMOBILE EXHAUST GAS EMISSIONS.
12640 APTIC NO. 30069

FUEL GASES

THE INDUSTRIAL FIRING SYSTEMS OF THE 1970'S.
12025 APTIC NO. 28968

NITROGEN OXIDES ANALYSIS.
12042 APTIC NO. 29538

SELF-IGNITION OF GASEOUS FUELS THROUGH THE HEATING EFFECT OF A WAST GAS STREAM.
11998 APTIC NO. 29739

MARKET DEVELOPMENT IN GAS ECONOMY.
12010 APTIC NO. 29781

STUDY OF THE COMBUSTION OF PARTLY PRE-MIXED LAMINAR NATURAL GAS FLAMES.
12021 APTIC NO. 29948

THE SE-DUCT--AN IDEAL SOLUTION FOR GAS HEATERS.
12002 APTIC NO. 30132

OUTLOOK OF ENVIRONMENTAL POLLUTION AND ITS PREVENTION TECHNOLOGY.
12124 APTIC NO. 29600

DESULFURIZATION OF LIQUEFIED PROPANE GAS. MOLECULAR SIEVE PROCESS.
12053 APTIC NO. 29617

REMOVAL OF CHLORINE FROM GASES.
12177 APTIC NO. 29802

MODERN OIL BURNING TECHNOLOGY AS DISPLAYED ON THE INTHERM IN STUTTGART AND THE 6.ISH IN FRANKFURT 1971.
12187 APTIC NO. 29824

STUDY ON AUTO EXHAUST.
12241 APTIC NO. 29909

QUANTITATIVE ALDEHYDE DETERMINATION IN THE AIR OF WORKING PLACES.
12317 APTIC NO. 30023

FUEL OIL PREPARATION

OIL REFINERS PREPARE FOR ANIT-POLLUTION CONTROLS.
12040 APTIC NO. 29127

GULF RESIDUAL OIL HDS PROCESS.
12136 APTIC NO. 29501

HYDROGENIZATION DESULFURIZATION METHOD OF HEAVY HC.
12189 APTIC NO. 29603

COUNTERMEASURES ON PREVENTION OF INDUSTRIAL POLLUTIONS--PART II ON SULFURIC ACID GAS.
12210 APTIC NO. 29646

ASPHALTENE HYDRODESULFURIZATION WITH SMALL CATALYST PARTICLES DISPOSED IN A GUARD CHAMBER-MAIN REACTOR SYSTEM.
12121 APTIC NO. 29719

ESSO/UNION FUEL OIL HYDRODESULFURIZATION PROCESSES. PART II: COMMERCIAL EXPERIENCE WITH GO-FINING.
12096 APTIC NO. 29926

INVESTIGATION OF HEAVY OIL DESULFURIZATION IN FIXED-BED CONTACT REACTORS.
12196 APTIC NO. 29931

CONTACT HYDRODESULFURIZATION OF PETROLEUM RESIDUAL OIL.
12200 APTIC NO. 29932

HYDRODESULFURIZATION OF HEAVY QUALITY OIL, RESIDUAL OIL, ETC.. (Jushitsuyu, zansayu to no suisokadatsuryuho). Text in Japanese. (Ishikawajima-Harima Heavy Industries (Japan)) Japan. Pat. Sho 46-819. 3p., Jan. 9, 1971. (Appl. Dec. 25, 1967, claims not given).
12218 APTIC NO. 29933

ESSO/UNION FUEL OIL HYDRODESULFURIZATION PROCESSES. PART I: PROCESS APPLICATIONS AND DEVELOPMENT.
12180 APTIC NO. 29954

METHOD TO MANUFACTURE CATALYST FOR DESULFURIZATION BY HYDROGEN ADDITION OF LIQUID HYDROCARBON.
12234 APTIC NO. 29974

CATALYST FOR HEAVY OIL DESULFURIZATION.
12224 APTIC NO. 29977

REACTOR DEVICE FOR HEAVY OIL DESULFURIZATION.
12149 APTIC NO. 29987

STUDY ON THE DIRECT DESULFURIZATION OF HEAVY OIL.
12159 APTIC NO. 29989

UNLEADED GASOLINE AND SMOG-FREE AUTOS--HOW AND WHY.
12644 APTIC NO. 30035

FUEL OILS

TODAY'S BASE OF EUROPEAN MINERAL OIL SUPPLY.
12004 APTIC NO. 28337

THE INDUSTRIAL FIRING SYSTEMS OF THE 1970'S.
12025 APTIC NO. 28968

OIL REFINERS PREPARE FOR ANIT-POLLUTION CONTROLS.
12040 APTIC NO. 29127

THE INFLUENCE OF ENVIRONMENTAL PROTECTION ON PLANNING, OPERATION AND ECONOMY OF STEAM POWER PLANTS. I. MAINTENANCE OF CLEAN AIR.
12036 APTIC NO. 29519

COMBUSTION OF WASTE OIL FROM COAL.
12043 APTIC NO. 29534

NITROGEN OXIDES ANALYSIS.
12042 APTIC NO. 29538

PHYSICAL-CHEMICAL PROBLEMS OF AIR POLLUTION.
11996 APTIC NO. 29786

CAUSES, MEASUREMENT AND LIMITATION OF PARTICULATE EMISSION FROM OIL-FIRED STEAM BOILERS.
12000 APTIC NO. 30021

CONTROL OF OIL-FIRED HEATERS, A MODERN COMMUNAL TASK.
12015 APTIC NO. 30100

PROCESS FOR THE SEPARATION OF SULFUR FROM GAS.
12052 APTIC NO. 29273

GULF RESIDUAL OIL HDS PROCESS.
12136 APTIC NO. 29501

EXPERIMENTS CONCERNING STOICHIOMETRIC COMBUSTION IN OIL-FIRED FURNACES OF FRENCH POWER PLANTS.
12090 APTIC NO. 29513

OUTLOOK OF ENVIRONMENTAL POLLUTION AND ITS PREVENTION TECHNOLOGY.
12124 APTIC NO. 29600

PREVENTION OF AIR POLLUTION ON IRON FOUNDRY.
12178 APTIC NO. 29602

HYDROGENIZATION DESULFURIZATION METHOD OF HEAVY HC.
12189 APTIC NO. 29603

COUNTERMEASURES ON PREVENTION OF INDUSTRIAL POLLUTIONS--PART II ON SULFURIC ACID GAS.
12210 APTIC NO. 29646

ENVIRONMENTAL POLLUTION CONTROL MEASURES IN WEST EUROPE AND PROBLEMS OF CARBIDE ELECTRIC FURNACE DUST IN JAPAN.
12073 APTIC NO. 29675

ASPHALTENE HYDRODESULFURIZATION WITH SMALL CATALYST PARTICLES DISPOSED IN A GUARD CHAMBER-MAIN REACTOR SYSTEM.
12121 APTIC NO. 29719

DESULFURIZATION.
12242 APTIC NO. 29742

H-OIL AS A TOOL FOR LOW SULFUR FUEL PRODUCTION.
12126 APTIC NO. 29808

MODERN OIL BURNING TECHNOLOGY AS DISPLAYED ON THE INTHERM IN STUTTGART AND THE 6.ISH IN FRANKFURT 1971.
12187 APTIC NO. 29824

EXPERIMENTAL RESEARCH ON LOW EXCESS AIR COMBUSTION IN BOILER BURNING HEAVY OIL ONLY.
12142 APTIC NO. 29860

DIRECT DESULFURIZATION OF HEAVY OIL.
12111 APTIC NO. 29908

TO PREVENT HEAVY OIL COMBUSTION GAS FROM PRODUCING BLACK SMOKE.
12213 APTIC NO. 29930

INVESTIGATION OF HEAVY OIL DESULFURIZATION IN FIXED-BED CONTACT REACTORS.
12196 APTIC NO. 29931

CONTACT HYDRODESULFURIZATION OF PETROLEUM RESIDUAL OIL.
12200 APTIC NO. 29932

HYDRODESULFURIZATION OF HEAVY QUALITY OIL, RESIDUAL OIL, ETC.. (Jushitsuyu, zansayu to no suisokadatsuryuho). Text in Japanese. (Ishikawajima-Harima Heavy Industries (Japan)) Japan. Pat. Sho 46-819. 3p., Jan. 9, 1971. (Appl. Dec. 25, 1967, claims not given).
12218 APTIC NO. 29933

STUDIES ON AIR POLLUTION CONTROL BY ADDITIVE INJECTION. PART II - PREVENTION OF CLOGGING AT HIGH TEMPERATURE HEATING SURFACE OF BOILER BY ADDING MG(OH)2 POWDER.
12075 APTIC NO. 29941

ESSO/UNION FUEL OIL HYDRODESULFURIZATION PROCESSES. PART I: PROCESS APPLICATIONS AND DEVELOPMENT.
12180 APTIC NO. 29954

DESULFURIZATION OF WASTE GASES AND FUELS.
12205 APTIC NO. 29957

METHOD TO MANUFACTURE CATALYST FOR DESULFURIZATION BY HYDROGEN ADDITION OF LIQUID HYDROCARBON.
12234 APTIC NO. 29974

CATALYST FOR HEAVY OIL DESULFURIZATION.
12224 APTIC NO. 29977

REACTOR DEVICE FOR HEAVY OIL DESULFURIZATION.
12149 APTIC NO. 29987

STUDY ON THE DIRECT DESULFURIZATION OF HEAVY OIL.
12159 APTIC NO. 29989

CONTROL OF POLLUTANT EMISSION AND SULPHURIC ACID CORROSION FROM COMBUSTION OF RESIDUAL FUEL OIL. PART I: LOW-PRESSURE HEATING BOILERS WITH MECHANICAL ATOMIZING BURNERS.
12164 APTIC NO. 30055

DISPOSAL OF HC FROM OIL CONTAINING RESIDUAL OIL AFTER DISTILLATION USING HYDROGEN.
12162 APTIC NO. 30095

AIR POLLUTION DERIVING FROM HEATING PLANTS AND INDUSTRIAL PROCESSES AND ITS CONTROL.
12229 APTIC NO. 30106

LOW POWER HOUSEHOLD OIL BURNING INSTALLATIONS. HOW THEY FUNCTION, PROPOSAL FOR A METHOD OF REGULATING THEM.
12079 APTIC NO. 30108

STUDY ON DESULFURIZATION BY THE INJECTION OF LIMESTONE POWDER INTO FURNACE OF OIL FIRING BOILER (PART I).
12145 APTIC NO. 30131

EMISSION MONITORING WITH ACKNOWLEDGED MEASURING UNITS AND ANALYZERS.
12260 APTIC NO. 29955

QUANTITATIVE ALDEHYDE DETERMINATION IN THE AIR OF WORKING PLACES.
12317 APTIC NO. 30023

PROBLEMS IN INDUSTRIAL POWER PLANTS.
12618 APTIC NO. 29956

INDUSTRIAL EMISSIONS: AN ANALYSIS OF SOME KEY FACTORS.
12669 APTIC NO. 29469

PRESENT SITUATION OF ADMINISTRATION CONCERNING POLLUTIONS.
12648 APTIC NO. 29598

POLLUTIONS PREVENTION PLAN FOR CHIBA AND ICHIHARA CITIES IN CHIBA PREFECTURE.
12650 APTIC NO. 29813

LONG RANGE PLANNING IN AIR RESOURCE MANAGEMENT.
12657 APTIC NO. 30056

FUEL STANDARDS

TODAY'S BASE OF EUROPEAN MINERAL OIL SUPPLY.
12004 APTIC NO. 28337

POLLUTIONS PREVENTION PLAN FOR CHIBA AND ICHIHARA CITIES IN CHIBA PREFECTURE.
12650 APTIC NO. 29813

FUMES

ATMOSPHERIC POLLUTION IN HEADINGS FOLLOWING SHOTFIRING.
12024 APTIC NO. 29678

METHOD TO ARREST AND REMOVE WHITE SMOKE PRODUCED FROM MOLTEN ZINC PLATING PROCESS.
12135 APTIC NO. 29940

REMOVAL OF BROWN FUME FROM WASTE GASES OF OPEN HEARTH FURNACE OXYGEN STEELMAKING PROCESS.
12194 APTIC NO. 29945

BALL BLANKETS FOR EFFLUENT TREATMENT.
12083 APTIC NO. 30034

FUME INCINERATION: EFFECTIVE, EFFICIENT.
12100 APTIC NO. 30077

SUMMARY OF H2SO4 MANUFACTURE.
12068 APTIC NO. 30099

MATERIALS FOR REFERENCE ABOUT ENVIRONMENTAL POLLUTION CONTROL.
12651 APTIC NO. 29818

FUMIGATION

ATMOSPHERIC DISPERSION OF STACK EFFLUENTS.
12458 APTIC NO. 29773

METABOLIC EFFECTS OF ATMOSPHERIC FLUORIDES ON PLANTS.
12605 APTIC NO. 29616

FUNGI

INCIDENCE OF RHODOTORULA SPECIES IN URBAN AIR.
12395 APTIC NO. 29637

FURNACES

THE INDUSTRIAL FIRING SYSTEMS OF THE 1970'S.
12025 APTIC NO. 28968

AIR POLLUTANTS GENERATED IN INTRA-FURNACE COMBUSTION.
12020 APTIC NO. 29532

EXPERIMENTAL STUDY ON PLASTICS INCINERATION.
12017 APTIC NO. 29841

STUDY OF THE COMBUSTION OF PARTLY PRE-MIXED LAMINAR NATURAL GAS FLAMES.
12021 APTIC NO. 29948

CAUSES, MEASUREMENT AND LIMITATION OF PARTICULATE EMISSION FROM OIL-FIRED STEAM BOILERS.
12000 APTIC NO. 30021

OPERATING EXPERIENCE OF EVAPORATIVE COOLERS SERVING CUPOLAS AIR POLLUTION CONTROL SYSTEMS.
12034 APTIC NO. 30032

THE EMISSION AND IMMISSION CONDITIONS OF THE POWER PLANTS IN THE BOEHLENER AREA.
12045 APTIC NO. 30072

CARBON MONOXIDE AS A COMBUSTION CONTROL PARAMETER.
12072 APTIC NO. 29471

DUST COLLECTOR FOR ELECTRIC FURNACE MANUFACTURING FERROALLOY.
12123 APTIC NO. 29481

EXPERIMENTS CONCERNING STOICHIOMETRIC COMBUSTION IN OIL-FIRED FURNACES OF FRENCH POWER PLANTS.
12090 APTIC NO. 29513

VENTILATION AND EXPLOSION EXPERIMENTS IN A WATER-TUBE BOILER OF A POWER PLANT.
12091 APTIC NO. 29514

HEAT EXTRACTION AIDS DEPOLLUTION OF GASES AND WATER IN CHEVROLET FOUNDRY.
12097 APTIC NO. 29523

MITSUBISHI-RESEARCH DISC SCRUBBER.
12080 APTIC NO. 29536

ENVIRONMENTAL POLLUTION CONTROL MEASURES IN WEST EUROPE AND PROBLEMS OF CARBIDE ELECTRIC FURNACE DUST IN JAPAN.
12073 APTIC NO. 29675

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

DEVELOPMENT OF GAS PURIFICATION INSTALLATIONS FOR ELECTRIC MELTING FURNACES.
12204 APTIC NO. 29740

MODERN OIL BURNING TECHNOLOGY AS DISPLAYED ON THE INTHERM IN STUTTGART AND THE 6.ISH IN FRANKFURT 1971.
12187 APTIC NO. 29824

THE NEW DUPLEX IRON MELTING PLANT AT THE M. BUSCH KG IN WEHRSTAPEL.
12094 APTIC NO. 29861

TO PREVENT HEAVY OIL COMBUSTION GAS FROM PRODUCING BLACK SMOKE.
12213 APTIC NO. 29930

STUDIES ON AIR POLLUTION CONTROL BY ADDITIVE INJECTION. PART II - PREVENTION OF CLOGGING AT HIGH TEMPERATURE HEATING SURFACE OF BOILER BY ADDING MG(OH)2 POWDER.
12075 APTIC NO. 29941

REMOVAL OF BROWN FUME FROM WASTE GASES OF OPEN HEARTH FURNACE OXYGEN STEELMAKING PROCESS.
12194 APTIC NO. 29945

HIGH-CONCENTRATION SULFUR DIOXIDE FROM CALCINING PYRITES IN THE DKSM FURNACE.
12157 APTIC NO. 29982

COMBUSTION OF WASTES CENTERING AROUND REMOVAL OF NOXIOUS GAS.
12077 APTIC NO. 29985

METHOD FOR MANUFACTURING SPHERICAL ACTIVE CARBON FROM COAL.
12141 APTIC NO. 29988

THE PROBLEM OF INDUSTRIAL DUST: WAYS TO REGULATE ITS COLLECTION.
12099 APTIC NO. 29990

ON A DUST-COLLECTING DEVICE FOR A FERROSILICON FURNACE.
12219 APTIC NO. 30086

ANNUAL SURVEY ON CUPOLA FURNACES, SEQUENCE EIGHT.
12101 APTIC NO. 30101

LOW POWER HOUSEHOLD OIL BURNING INSTALLATIONS. HOW THEY FUNCTION, PROPOSAL FOR A METHOD OF REGULATING THEM.
12079 APTIC NO. 30108

DETERMINATION OF A DOCTRINE FOR VALID SAMPLING.
12273 APTIC NO. 29560

DETERMINATION OF THE SOOT INDEX IN WASTE GASES OF OIL BURNERS.
12257 APTIC NO. 29749

POLLUTIONS AND TOKYO METROPOLITAN GOVERNMENT.
12365 APTIC NO. 29973

CARBON MONOXIDE AS TOXIC GAS.
12538 APTIC NO. 29640

PROBLEMS OF FLUORINE EMISSION MEASUREMENTS.
12608 APTIC NO. 29736

COMPLEX ALKALI IRON SULFATES A CONTRIBUTION TO THE THERMODYNAMICS OF FIRESDIDE HIGH-TEMPERATURE CORROSION.
12616 APTIC NO. 29783

HOW EMISSION CONTROL AFFECTS MELTING COSTS.
12628 APTIC NO. 29879

ON EXAMPLE OF PRACTICAL APPLICATION OF DUST COLLECTOR FOR ELECTRIC FURNACE FOR FERRO-ALLOY.
12632 APTIC NO. 29892

PRESENT SITUATION OF ADMINISTRATION CONCERNING POLLUTIONS.
12648 APTIC NO. 29598

CASTING WORK ENVIRONMENTS AND PUBLIC NUISANCE.
12655 APTIC NO. 29975

G

GAMMA RADIATION

DETERMINATION OF IRON, CHROMIUM, COBALT, NICKEL, AND SCANDIUM IN ASBESTOS BY NEUTRON ACTIVATION ANALYSIS.
12292 APTIC NO. 30129

GAS CHROMATOGRAPHY

THE EXHAUST GAS COMPOSITION AT THE FM GASOLINE ENGINE.
12046 APTIC NO. 29516

QUALITATIVE ANALYSIS OF EXHAUST GAS FROM FISH MEAL PLANT.
12028 APTIC NO. 29662

A PROGRAM TO SAMPLE AND ANALYZE AIR POLLUTION IN THE VICINITY OF A CHEMICAL RECLAMATION PLANT.
12039 APTIC NO. 29698

ON COMPOSITION AND LEAD CONTENT OF COMMERCIAL GASOLINE.
12048 APTIC NO. 29936

THE MEASUREMENT OF ATMOSPHERIC POLLUTION IN GERMANY.
12340 APTIC NO. 29066

NEW METHODS OF DETERMINING AIR POLLUTION.
12316 APTIC NO. 29595

GC-MS ANALYSIS OF THE SEMI-VOLATILES OF CIGARETTE SMOKE.
12282 APTIC NO. 29660

ON MEASUREMENT OF ODOR.
12256 APTIC NO. 29726

STUDY OF TRACES OF HEAVY ORGANIC PRODUCTS IN FUEL COMBUSTION GASES. (Etude des traces de produits organiques lourds dans les fumees de combustion de fuel). Text in French. Rev. Gen. Thermique (Paris), 10(111):223-238, March 1971. 90 refs.
12310 APTIC NO. 29766

ENVIRONMENTAL POLLUTION AND ITS MEASUREMENTS (II).
12338 APTIC NO. 29843

DETERMINATION OF AROMATIC HYDROCARBONS EMITTED FROM THE DRY BATTERY PLANT.
12287 APTIC NO. 29862

FLAME PHOTOMETRIC DETECTION OF VOLATILE SULPHUR COMPOUNDS IN SMOKE FROM VARIOUS TYPES OF CIGARETTES.
12283 APTIC NO. 29874

GAS CHROMATOGRAPHIC ANALYSIS OF BENZENE AND TOLUENE IN AUTOMOBILE EXHAUST GAS.
12295 APTIC NO. 29907

AUTOMATED ANALYSIS SYSTEMS MAKES KRAFT EMISSION MEASUREMENTS EASY.
12325 APTIC NO. 29913

GAS CHROMATOGRAPHIC ANALYSIS OF TRACES OF CO AND CO2.
12326 APTIC NO. 29938

DETERMINATION AND EVALUATION OF LOW CONCENTRATIONS OF INDUSTRIAL AIR POLLUTANTS.
12309 APTIC NO. 30014

GAS CHROMATOGRAPHY OF REACTIVE SULFUR GASES IN AIR AT THE PARTS- PER-BILLION LEVEL.
12347 APTIC NO. 30065

THE GAS CHROMATOGRAPHIC DETERMINATION OF PESTICIDES. (PART 3) DETERMINATION OF RESIDUES OF ORGANOPHOSPHORUS PESTICIDES.
12349 APTIC NO. 30134

ANALYSIS OF HC OF LOW GRADE IN ATMOSPHERE.
12391 APTIC NO. 29482

URBAN POLLUTION BY AUTOMOBILE EXHAUST GAS.
12387 APTIC NO. 29744

MEASUREMENT OF ATMOSPHERIC LEVELS OF PESTICIDES.
12392 APTIC NO. 29812

EXPERIMENT ON PHOTOCHEMICAL REACTION OF MOTOR EXHAUST GAS.
12469 APTIC NO. 29500

STUDIES ON PHOTOCHEMICAL REACTION BETWEEN SULFURIC ACID GAS AND ORGANIC COMPOUNDS (2).
12512 APTIC NO. 29463

PHOTOCHEMICAL REACTION BETWEEN SO2 AND ORGANIC COMPOUNDS (II).
12514 APTIC NO. 29967

THE REACTION KINETICS OF MERCAPTAN WITH OZONE IN THE PPM RANGE.
12497 APTIC NO. 30016

PHOTOLYSIS OF THIOLANE VAPOR.
12478 APTIC NO. 30115

EXPERIMENTAL STUDIES ON THE HEALTH EFFECTS OF AUTO EXHAUST GAS IN LOW CONCENTRATIONS. (REPORT 1) PRELIMINARY EXPERIMENT.
12589 APTIC NO. 29921

DAMAGE TO PLANTS BY AIR POLLUTANTS.
12603 APTIC NO. 29746

ABSCISSION: THE PHYTOGERONTOLOGICAL EFFECTS OF ETHYLENE.
12592 APTIC NO. 30060

GAS SAMPLING

ATMOSPHERIC POLLUTION IN HEADINGS FOLLOWING SHOTFIRING.
12024 APTIC NO. 29678

ON MEASUREMENT OF ODOR.
12256 APTIC NO. 29726

MEASUREMENT OF GASEOUS AND PARTICULATE FLUORINE EMISSIONS.
12322 APTIC NO. 29738

GAS TURBINES

MARKET DEVELOPMENT IN GAS ECONOMY.
12010 APTIC NO. 29781

COUNTERMEASURES ON AUTOMOBILE EXHAUST GAS.
12050 APTIC NO. 29935

MEASUREMENT DATA OBTAINED FROM EXPERIMENTS WITH THE DYNA-VANE HIGH CAPACITY DRY TYPE DUST SEPARATOR.
12108 APTIC NO. 28791

THE AUTOMOBILE AND AIR POLLUTION.
12186 APTIC NO. 29633

ALMOST POLLUTION-FREE POWERPLANTS ARE SCHEDULED FOR EARLY 1975.
12092 APTIC NO. 29856

FIRST RESULTS WITH THE M.A.N.-EXPERIMENTAL GAS TURBINE FOR COMMERCIAL VEHICLES.
12131 APTIC NO. 30088

CALCULATION OF A JET AXIS IN A DRIFTING FLOW.
12507 APTIC NO. 30042

GASIFICATION (SYNTHESIS)

SULFUR RECOVERY IN THE MANUFACTURE OF PIPELINE GAS FROM COAL.
12635 APTIC NO. 29143

GASOLINES

OIL REFINERS PREPARE FOR ANIT-POLLUTION CONTROLS.
12040 APTIC NO. 29127

WHY LEAD IN GASOLINE? THE EFFECT OF LEAD CONTAINING ANTI-KNOCK AGENTS FOR OTTO ENGINE FUELS.
11995 APTIC NO. 29782

LEAD POLLUTION--A GROWING HAZARD TO PUBLIC HEALTH.
11999 APTIC NO. 29872

ON COMPOSITION AND LEAD CONTENT OF COMMERCIAL GASOLINE.
12048 APTIC NO. 29936

MARKET TENDENCIES FOR LEAD AND ZINC.
12003 APTIC NO. 30001

GASOLINE, LEAD AND AIR POLLUTION.
12014 APTIC NO. 30027

TAKING ANOTHER LOOK BEFORE WE TAKE THE LEAD OUT.
11997 APTIC NO. 30067

FUEL VAPOR ADSORBING APPARATUS.
12103 APTIC NO. 27562

AN EXPERIMENTAL STUDY ON THE PERFORMANCE OF A MULTIFUEL ENGINE. PART 3. AN ATTEMPT OF M-COMBUSTION APPLIED TO A SWIRL CHAMBER.
12183 APTIC NO. 29520

EMISSIONS FROM INTERNAL COMBUSTION ENGINE.
12225 APTIC NO. 29531

CO BOILER OF FLUIDIZED BED TYPE CATALYTIC CRACKING PROCESS PRODUCIN NO LEAD GASOLINE.
12237 APTIC NO. 29535

FUTURE OF GASOLINE WITH LEAD ANTIKNOCKS.
12243 APTIC NO. 29625

LAW-MAKERS SAY: CLEAN UP OR SHUT DOWN.
12055 APTIC NO. 29628

CAN ADDITIVES DECREASE DIESEL SMOKE? Power, 114(8):60, Aug. 1970.
12310 APTIC NO. 29766

GASOLINE WITHOUT LEAD. TECHNICAL POSSIBILITIES FOR A NON-LEADED FUEL.
12084 APTIC NO. 30010

EXHAUST EMISSIONS FROM HEAVY DUTY VEHICLES.
12332 APTIC NO. 27631

POLLUTION TESTS ON IDLING GASOLINE MOTORS.
12251 APTIC NO. 29765

STUDIES ON LEAD CHROMATE OBTAINED FROM TETRAALKYL LEAD IN LEADED GASOLINE. I. X-RAY DIFFRACTION TESTS OF THE LEAD CHROMATE CRYSTALS.
12296 APTIC NO. 29810

LEAD POLLUTION AND PHOTOCHEMICAL SMOG IN TOKYO.
12376 APTIC NO. 29647

POLLUTIONS AND TOKYO METROPOLITAN GOVERNMENT.
12365 APTIC NO. 29973

THE TENDENCY OF AIR POLLUTION AT NAGOYA CITY OBSERVED FROM THE WEIGHT OF FALLING DUST.
12396 APTIC NO. 30076

LEAD IN THE ENVIRONMENT.
12564 APTIC NO. 29493

FOUR-ALKYL LEAD AND ENVIRONMENTAL POLLUTION.
12588 APTIC NO. 29825

UNLEADED GASOLINE AND SMOG-FREE AUTOS--HOW AND WHY.
12644 APTIC NO. 30035

GENETICS

PULMONARY CHANGES IN 7000 MICE FOLLOWING PROLONGED EXPOSURE TO AMBIENT AND FILTERED LOS ANGELES AIR.
12551 APTIC NO. 29763

GERMANY

THE INDUSTRIAL FIRING SYSTEMS OF THE 1970'S.
12025 APTIC NO. 28968

THE EXHAUST GAS COMPOSITION AT THE FM GASOLINE ENGINE.
12046 APTIC NO. 29516

BUS AND VEHICLE FOR TRANSPORTATION WITH ELECTRIC DRIVE.
11987 APTIC NO. 29517

THE INFLUENCE OF ENVIRONMENTAL PROTECTION ON PLANNING, OPERATION AND ECONOMY OF STEAM POWER PLANTS. I. MAINTENANCE OF CLEAN AIR.
12036 APTIC NO. 29519

CONSIDERATIONS IN THE CONSTRUCTION OF LARGE REFUSE INCINERATORS.
12026 APTIC NO. 29547

SELF-IGNITION OF GASEOUS FUELS THROUGH THE HEATING EFFECT OF A WAST GAS STREAM.
11998 APTIC NO. 29739

MARKET DEVELOPMENT IN GAS ECONOMY.
12010 APTIC NO. 29781

WHY LEAD IN GASOLINE? THE EFFECT OF LEAD CONTAINING ANTIKNOCK AGENTS FOR OTTO ENGINE FUELS.
11995 APTIC NO. 29782

PHYSICAL-CHEMICAL PROBLEMS OF AIR POLLUTION.
11996 APTIC NO. 29786

EXPERIMENTS WITH ELECTRIC VEHICLES.
11989 APTIC NO. 29886

VEHICLE EMISSIONS.
12027 APTIC NO. 29894

THE REMOTE HEATING PLANT IN RECKLINGHAUSEN--A CONTRIBUTION TO THE PROTECTION OF THE ENVIRONMENT.
11990 APTIC NO. 29914

STUDY OF THE COMBUSTION OF PARTLY PRE-MIXED LAMINAR NATURAL GAS FLAMES.
12021 APTIC NO. 29948

MARKET TENDENCIES FOR LEAD AND ZINC.
12003 APTIC NO. 30001

CLOSE SCRUTINY OF AUTOMOBILE EXHAUST GASES. TECHNICAL INSPECTION SERVICE FOR AUTOMOBILES IN NEW PREMISES.
12005 APTIC NO. 30002

CAUSES, MEASUREMENT AND LIMITATION OF PARTICULATE EMISSION FROM OIL-FIRED STEAM BOILERS.
12000 APTIC NO. 30021

THE EMISSION AND IMMISSION CONDITIONS OF THE POWER PLANTS IN THE BOEHLENER AREA.
12045 APTIC NO. 30072

THE SE-DUCT--AN IDEAL SOLUTION FOR GAS HEATERS.
12002 APTIC NO. 30132

MEASUREMENT DATA OBTAINED FROM EXPERIMENTS WITH THE DYNAVANE HIGH CAPACITY DRY TYPE DUST SEPARATOR.
12108 APTIC NO. 28791

VENTILATION AND EXPLOSION EXPERIMENTS IN A WATER-TUBE BOILER OF A POWER PLANT.
12091 APTIC NO. 29514

THE NEW PLANT FOR PRODUCTION OF SULFUR DIOXIDE AT LEVERKUSEN.
12203 APTIC NO. 29577

A NEW FILTER FOR SUSPENDED MATTER WITH HIGH COLLECTION EFFICIENCY AND LOW FLOW RESISTANCE.
12231 APTIC NO. 29578

DEVELOPMENT OF GAS PURIFICATION INSTALLATIONS FOR ELECTRIC MELTING FURNACES.
12204 APTIC NO. 29740

PURIX WET COLLECTOR FOR WASTE GAS CLEANING.
12060 APTIC NO. 29767

GASIFICATION OF HYDROCARBONS.
12137 APTIC NO. 29779

MODERN OIL BURNING TECHNOLOGY AS DISPLAYED ON THE INTHERM IN STUTTGART AND THE 6.ISH IN FRANKFURT 1971.
12187 APTIC NO. 29824

PROGRESS IN DEDUSTING TECHNIQUE IN CEMENT WORKS.
12125 APTIC NO. 29830

ACID MIST PRECIPITATOR MADE OF TEFLON FIBER.
12061 APTIC NO. 29833

COMBUSTION PLANT FOR RUBBER-COATED EQUIPMENT, TANKS AND CABLES.
12191 APTIC NO. 29834

THE NEW DUPLEX IRON MELTING PLANT AT THE M. BUSCH KG IN WEHRSTAPEL.
12094 APTIC NO. 29861

ATTEMPT AT A THERMODYNAMIC SOLUTION: AUTOMOBILE EXHAUST GASES.
12147 APTIC NO. 29906

DESULFURIZATION OF WASTE GASES AND FUELS.
12205 APTIC NO. 29957

WASTE GAS RECIRCULATION IN COMBUSTION ENGINES, PRIMARILY DIESEL ENGINES.
12181 APTIC NO. 29962

GASOLINE WITHOUT LEAD. TECHNICAL POSSIBILITIES FOR A NON-LEADED FUEL.
12084 APTIC NO. 30010

STUDIES OF VENTILATORY MEASURES INDOORS AGAINST POLLEN ALLERGY.
12116 APTIC NO. 30011

PROCESS FOR REMOVING SULPHUR FROM GASES.
12139 APTIC NO. 30049

FIRST RESULTS WITH THE M.A.N.-EXPERIMENTAL GAS TURBINE FOR COMMERCIAL VEHICLES.
12131 APTIC NO. 30088

THE MEASUREMENT OF ATMOSPHERIC POLLUTION IN GERMANY.
12340 APTIC NO. 29066

A MEASUREMENT GRID FOR AIR POLLUTION IN THE MOUTH OF THE RIVER RHINE IN ROTTERDAM.
12333 APTIC NO. 29460

PARTICLE SIZE MEASURING WITH THE TELEVISION MICROSCOPE QUANTIMET FOR SIZES MINUS 4 MICRONS.
12304 APTIC NO. 29512

A GAS ANALYSER FOR THE MEASUREMENT OF IMPURITIES IN AIR.
12277 APTIC NO. 29581

EXHAUST GAS EVALUATION BY AIR RATIO COEFFICIENTS.
12278 APTIC NO. 29638

EXPERIENCES WITH FLUORINE EMISSION MEASUREMENTS.
12290 APTIC NO. 29737

MEASUREMENT OF GASEOUS AND PARTICULATE FLUORINE EMISSIONS.
12322 APTIC NO. 29738

DETERMINATION OF THE SOOT INDEX IN WASTE GASES OF OIL BURNERS.
12257 APTIC NO. 29749

DETERMINATION OF ORGANICALLY BOUND CARBON IN MOIST WASTE GASES.
12345 APTIC NO. 29839

EMISSION MONITORING WITH ACKNOWLEDGED MEASURING UNITS AND ANALYZERS.
12260 APTIC NO. 29955

SMOKE PLUMES MONITORED DAY AND NIGHT. PRACTICAL EXPERIENCE WITH A TV-LASER PLANT IN DUISBURG.
12247 APTIC NO. 30013

DETERMINATION AND EVALUATION OF LOW CONCENTRATIONS OF INDUSTRIAL AIR POLLUTANTS.
12309 APTIC NO. 30014

STUDY OF THE SUSPENDED PARTICULATES AND LEAD CONCENTRATION IN THE AIR WITHIN THE CITY LIMITS OF MAGDEBURG.
12382 APTIC NO. 29515

THERMODYNAMICS OF THE AEROSOLS IN THE ATMOSPHERE.
12428 APTIC NO. 29785

COAGULATION OF DUST PARTICLES, IN PARTICULAR BY AEROSOLS OF SEA WATER SALT.
ERROR

THE ABSORPTION COEFFICIENT OF A GASEOUS SUBSTANCE ON A SWARMING FILM.
12479 APTIC NO. 29994

THE REACTION KINETICS OF MERCAPTAN WITH OZONE IN THE PPM RANGE.
12497 APTIC NO. 30016

EFFECTS OF ATMOSPHERIC FACTORS AND OF SO2 AND AIRBORNE DUST EMISSIONS ON INTRABRONCHIAL FLOW RESISTANCE AND INTRATHORACAL GAS VOLUME OF SOUND AND SICK MEN.
12571 APTIC NO. 29048

GENERATION AND MEASUREMNT OF AIR IONS FOR MEDICAL APPLICATIONS AND THER INFLUENCE ON REACTION TIME AND MONOSYNAPTIC REFLEX OF MAN.
12547 APTIC NO. 29267

EFFECTS OF LOW CARBON MONOXIDE CONCENTRATIONS IN MAN.
12533 APTIC NO. 29609

CATECHOLAMINE-INDEPENDENT GLYCOGENOLYSIS IN BRAIN DURING CARBON MONOXIDE POISONING.
12545 APTIC NO. 29835

THE STUDY OF THE POLLUTED AIR INFLUENCE ON CHILDREN S HEALTH IN RUHRDISTRICT.
12544 APTIC NO. 29899

ADDITION OF LEAD TO FUEL - HARMFUL OR DANGEROUS? (Bleizusaetze im Kraftstoff - harmlos oder gefaehrlich)? Text in German. VDI (Ver. Deut. Ingr.) Nachr. (Berlin), 25(9):6, 1971.
12527 APTIC NO. 30000

PROBLEMS OF FLUORINE EMISSION MEASUREMENTS.
12608 APTIC NO. 29736

THE EFFECTS OF AIR POLLUTION ON VEGETATION.
12600 APTIC NO. 30003

COMPLEX ALKALI IRON SULFATES A CONTRIBUTION TO THE THERMODYNAMICS OF FIRESDIDE HIGH-TEMPERATURE CORROSION.
12616 APTIC NO. 29783

ALUMINUM MATERIAL FOR THE CHEMICAL INDUSTRY.
12624 APTIC NO. 29922

A STUDY OF THE CONVERSION OF SO2 TO SO3.
12623 APTIC NO. 30022

THE COSTS FOR MAINTENANCE OF CLEAN AIR. THE INFLUENCE OF SOCIAL COSTS ON THE SELECTION OF AN INDUSTRIAL SITE.
12633 APTIC NO. 29923

THE ECONOMIC IMPORTANCE OF POLLUTION CONTROL.
12626 APTIC NO. 30054

IT BEGAN WITH THE SMOG IN CALIFORNIA. CALIFORNIA TEST, EUROPEAN TEST--INTERNATIONAL REGULATIONS OF AUTOMOBILE EXHAUST GAS EMISSIONS.
12640 APTIC NO. 30069

INDUSTRIAL EMISSIONS: AN ANALYSIS OF SOME KEY FACTORS.
12669 APTIC NO. 29469

COMMISSION FOR INDUSTRIAL DUST PROBLEMS IN GERMANY.
12520 APTIC NO. 29555

STATE AND INSPECTION OF PROTECTION OF ATMOSPHERE AND LEGAL REGULATIONS VALID TODAY.
12664 APTIC NO. 29828

POPULATION PLANTS TREES: ENVIRONMENTAL PROTECTION IN JAPAN.
12652 APTIC NO. 29859

FEDERALISM MAKES ENVIRONMENTAL PROTECTION DIFFICULT.
12654 APTIC NO. 29969

LEGAL ASPECTS OF AIR POLLUTION IN BELGIUM AND OTHER NEIGHBORING COUNTRIES.
12659 APTIC NO. 30040

COMPARATIVE STUDY OF CERTAIN PROVISIONS IN MEMBER STATES FOR CONTROLLING AIR POLLUTION.
12656 APTIC NO. 30052

ON SOME BASIC PROBLEMS OF THE PURIFICATION OF THE AIR.
12676 APTIC NO. 29591

INTERNATIONAL SYMPOSIUM ON THE HYGIENE OF THE AIR OF THE MEMBER COUNTRIES OF THE COUNCIL FOR MUTUAL ECONOMIC AID.
12679 APTIC NO. 29593

GLANDS

PATHOLOGICAL STUDY ON THE EXPERIMENTAL RABBITS AT AIR-POLLUTED AREA IN YOKKAICHI.
12590 APTIC NO. 29502

THE STUDY OF THE POLLUTED AIR INFLUENCE ON CHILDREN S HEALTH IN RUHRDISTRICT.
12544 APTIC NO. 29899

GLASS FABRICS

DETERMINATION OF LEAD CONTENTS IN AUTOMOBILE EXHAUST GAS.
12013 APTIC NO. 29661

A NEW ENVIRONMENTAL POLLUTANT - POLYCHLORINATED BIPHENYLS (PCB).
12044 APTIC NO. 29984

DUST COLLECTOR FOR ELECTRIC FURNACE MANUFACTURING FERROALLOY.
12123 APTIC NO. 29481

COLLECTION EFFICIENCIES OF GLASS FIBER FILTERS FOR EACH SIZE OF LEAD AEROSOLS.
12140 APTIC NO. 29664

FILTRATION OF MULTI-DISPERSING AEROSOL UNDER THE FORCE OF GRAVITY.
12115 APTIC NO. 29730

EFFICIENCY OF FILTERS FOR RADIOACTIVE AEROSOL.
12155 APTIC NO. 29768

ACID MIST PRECIPITATOR MADE OF TEFLON FIBER.
12061 APTIC NO. 29833

ON A DUST-COLLECTING DEVICE FOR A FERROSILICON FURNACE.
12219 APTIC NO. 30086

TFE-FLUOROCARBON FIBER FILTER BAGS--IT COSTS MORE TO GO FIRST CLASS.
12109 APTIC NO. 30121

A MEASUREMENT GRID FOR AIR POLLUTION IN THE MOUTH OF THE RIVER RHINE IN ROTTERDAM.
12333 APTIC NO. 29460

DETERMINATION OF A DOCTRINE FOR VALID SAMPLING.
12273 APTIC NO. 29560

OXIDATION OF NITROGEN MONOXIDE.
12320 APTIC NO. 29676

A SHORT TERM DETERMINATION OF BENZO(A)PYRENE AND BENZO(K) FLUORANTHENE IN AIR POLLUTANTS.
12319 APTIC NO. 29965

GRAPHITE

METAL COMPONENTS OF FLOATING DUST.
12286 APTIC NO. 29464

SOME OBSERVATIONS ON THE ABNORMAL AGGLOMERATION OF CARBON BLACK AND OF GRAPHITE POWDER.
12506 APTIC NO. 29548

GRASSES

PLANTS AND SOILS AS INDICATORS OF METALS IN THE AIR.
12281 APTIC NO. 30113

GRAVITY SETTLING

FILTRATION OF MULTI-DISPERSING AEROSOL UNDER THE FORCE OF GRAVITY.
12115 APTIC NO. 29730

APPROXIMATE SOLUTION OF THE EQUATIONS FOR AEROSOL AGGLOMERATION.
12483 APTIC NO. 30111

GREAT BRITAIN

OIL REFINERS PREPARE FOR ANIT-POLLUTION CONTROLS.
12040 APTIC NO. 29127

ATMOSPHERIC POLLUTION IN HEADINGS FOLLOWING SHOTFIRING.
12024 APTIC NO. 29678

CEMENT DUST AT GREAT BRITAIN.
12001 APTIC NO. 29832

LEAD POLLUTION--A GROWING HAZARD TO PUBLIC HEALTH.
11999 APTIC NO. 29872

PARTICLE CAPTURE MECHANISMS IN FIBROUS FILTERS.
12214 APTIC NO. 29324

CARBON MONOXIDE AS A COMBUSTION CONTROL PARAMETER.
12072 APTIC NO. 29471

MODERN DUST CONTROL.
12217 APTIC NO. 29486

CYLINDER HEAD DESIGN.
12054 APTIC NO. 29624

PULSED EMISSION CHIMNEY.
12082 APTIC NO. 29626

EMISSION CONTROL BY EXHAUST MANIFOLD REACTOR--AN INITIAL STUDY FOR SMALL ENGINES.
12163 APTIC NO. 29629

BALL BLANKETS FOR EFFLUENT TREATMENT.
12083 APTIC NO. 30034

IMPROVEMENTS IN OR RELATING TO ELECTRO-PRECIPITATORS.
12110 APTIC NO. 30044

THE IMPORTANCE OF AGGREGATION PHENOMENA IN THE QUANTITATIVE ESTIMATE OF DUST IN THE AIR.
12354 APTIC NO. 29549

RESULTS OF COMPARATIVE TESTS ON QUARTZ CONTENT OBTAINED FROM LABORATORIES USING VARIOUS TECHNIQUES OF DETERMINATION.
12327 APTIC NO. 29552

INSTRUMENTS AND THEIR APPLICATIONS IN MASS SPECTROMETRY.
12261 APTIC NO. 29579

PARTICLE SIZE DISTRIBUTION IN AEROSOLS FORMED FROM GASEOUS REACTANTS.
12268 APTIC NO. 29854

A METER FOR THE SITE DETERMINATION OF HYDROLYSABLE FLUORIDES IN SULPHUR HEXAFLUORIDE.
12336 APTIC NO. 30007

A COMPREHENSIVE SAMPLING SYSTEM FOR STUDYING THE RELATION BETWEEN VISIBILITY, METEOROLOGICAL PARAMETERS AND ATMOSPHERIC POLLUTION.
12276 APTIC NO. 30082

PLANTS AND SOILS AS INDICATORS OF METALS IN THE AIR.
12281 APTIC NO. 30113

ATMOSPHERIC POLLUTION AT MODERN COKE WORKS.
12380 APTIC NO. 29257

A BIOLOGICAL SCALE FOR THE ESTIMATION OF SULPHUR DIOXIDE POLLUTION.
12379 APTIC NO. 29522

INTERPRETATION OF RESULTS OF EXAMINATION OF AIR.
12386 APTIC NO. 29545

CLEANER AIR IN LONDON.
12377 APTIC NO. 29912

CONCASTER, AN AREA STUDY.
12366 APTIC NO. 30047

DISTRIBUTION OF POLLUTION AT SOME COUNTRY SITES.
12425 APTIC NO. 29582

THE PREVENTION OF POLLUTION.
12416 APTIC NO. 29623

CONTINUOUS CHARGED CLOUD-PARTICLE SAMPLER.
12451 APTIC NO. 29712

AIR POLLUTION IN AN URBAN ENVIRONMENT.
12413 APTIC NO. 30045

SOME RESULTS OF LIDAR PROBING OF THE TROPOSHERE.
12434 APTIC NO. 30105

SOME OBSERVATIONS ON THE ABNORMAL AGGLOMERATION OF CARBON BLACK AND OF GRAPHITE POWDER.
12506 APTIC NO. 29548

RATES OF ENERGY TRANSFER FROM N2 A CUBED SIGMA(+) U TO VARIOUS MOLECULES. INITIAL AND FINAL QUANTUM STATES IN THE TRANSFER TO NOX SQUARED PI AND HG(6 1S SUB 0), AND VIBRATIONAL RELAXATION OF N2 A CUBED SIGMA(+) U (V EQUALS 1) IN HELIUM.
12481 APTIC NO. 29750

THE ADSORPTION OF CARBON MONOXIDE ON CU(001) LEED AND AUGER EMISSION STUDIES.
12496 APTIC NO. 29799

PROGRESS REVIEW NO. 62: COMBUSTION OF SINGLE DROPLETS AND SIMPLIFIED SPRAY SYSTEMS.
12493 APTIC NO. 29803

DEPOSITION OF LIQUID OR SOLID DISPERSIONS FROM TURBULENT GAS STREAMS: A STOCHASTIC MODEL.
12494 APTIC NO. 29873

KINETICS AND MECHANISMS OF THE VIBRATIONAL RELAXATION OF NOX2PI(V EQUALS 1) IN THE TEMPERATURE RANGE 100-433 K.
12474 APTIC NO. 29881

EXPERIENCE WITH INDUSTRIAL MULTI-FLUE CHIMNEYS OF 100-200 IN HEIGHT.
12473 APTIC NO. 29890

PROGRESS REPORT. JANUARY-DECEMBER 1969.
12555 APTIC NO. 28850

LEAD IN THE ENVIRONMENT.
12564 APTIC NO. 29493

CANCER MORTALITY IN RELATION TO NATIONAL CONSUMPTION OF CIGARETTES, SOLID FUEL, TEA AND COFFEE.
12585 APTIC NO. 29608

SOME RECENT TOPICS IN AIR POLLUTION AND HEALTH IN LONDON.
12562 APTIC NO. 29882

CHANGES IN AIRWAYS CONDUCTANCE ON SMOKING A CIGARETTE.
12540 APTIC NO. 30135

FURTHER STUDIES ON THE EFFECT OF SULPHUR DIOXIDE ON LICHENS AND BRYOPHYTES.
12599 APTIC NO. 29645

USING TITANIUM IN THE CHEMICAL PLANT.
12610 APTIC NO. 29857

COMPARATIVE STUDY OF PERMISSIBLE LIMITS OF AIR DUSTINESS IN VARIOUS COUNTRIES.
12639 APTIC NO. 29543

THE PREVENTION OF POLLUTION. PART II-POLLUTION AND THE LAW.
12658 APTIC NO. 29474

STATE AND INSPECTION OF PROTECTION OF ATMOSPHERE AND LEGAL REGULATIONS VALID TODAY.
12664 APTIC NO. 29828

COMPARATIVE STUDY OF CERTAIN PROVISIONS IN MEMBER STATES FOR CONTROLLING AIR POLLUTION.
12656 APTIC NO. 30052

NOBODY BREATHES FRESH AIR. FACTS AND ARGUMENTS ABOUT AIR POLLUTION.
12677 APTIC NO. 29459

GROUND LEVEL

PESTICIDES IN AIR. VOLATILIZATION OF SOIL-APPLIED DDT AND DDD FROM FLOODED AND NONFLOODED PLOTS.
12047 APTIC NO. 29620

SOURCE SAMPLING OF ATMOSPHERIC CONTAMINANTS.
12248 APTIC NO. 30118

ANALYSIS OF HC OF LOW GRADE IN ATMOSPHERE.
12391 APTIC NO. 29482

CLEANER AIR IN LONDON.
12377 APTIC NO. 29912

DISTRIBUTION OF LEAD IN THE AIR NEAR CITY ROADS.
12388 APTIC NO. 29918

POLLUTIONS AND TOKYO METROPOLITAN GOVERNMENT.
12365 APTIC NO. 29973

STUDIES ON AIR POLLUTION DUE TO AUTOMOBILE EXHAUST. REPORT 15: AIR POLLUTION AT THE VICINITY OF BOOTHS IN MEISHIN HIGHWAY.
12389 APTIC NO. 30075

ATMOSPHERIC DISPERSION OF STACK EFFLUENTS.
12458 APTIC NO. 29773

ESTIMATION OF GROUND LEVEL CONCENTRATION BY SMOKE-DIFFUSION WIND TUNNELS.
12462 APTIC NO. 29820

TURBULENT DIFFUSION THEORY TAKING TURBULENT BOUNDARY LAYER INTO CONSIDERATION.
12463 APTIC NO. 29822

DISSIPATION OF SO2 GENERATED IN A STEELWORK INTO THE GROUND LAYER OF THE ATMOSPHERE.
12467 APTIC NO. 29867

ON PLUMBIC POLLUTION OF MUNICIPAL ATMOSPHERE--BEHAVIORS OF PLUMBIC COMPOUND AS AEROSOL.
12431 APTIC NO. 30073

NEW TREND IN POLLUTIONS COUNTERMEASURES IN THE 70 S.
12660 APTIC NO. 29507

POLLUTIONS PREVENTION PLAN FOR CHIBA AND ICHIHARA CITIES IN CHIBA PREFECTURE.
12650 APTIC NO. 29813

H

HALOGEN GASES

TECHNOLOGY RENDERS ITS SERVICES TO AIR PURIFICATION AND NOISE SUPPRESSION AS PART OF ENVIRONMENTAL HYGIENE.
12227 APTIC NO. 29725

REMOVAL OF CHLORINE FROM GASES.
12177 APTIC NO. 29802

PERFORMANCE OF CHARCOAL-IMPREGNATED FILTER PAPER TYPE CP-20 FOR COLLECTING AIRBORNE RADIOIODINE.
12185 APTIC NO. 29870

LOSS OF MERCURY FROM CHLORALKALI PLANTS.
12120 APTIC NO. 30117

A GAS ANALYSER FOR THE MEASUREMENT OF IMPURITIES IN AIR.
12277 APTIC NO. 29581

OXIDATION OF NITROGEN MONOXIDE.
12320 APTIC NO. 29676

EXPERIENCES WITH FLUORINE EMISSION MEASUREMENTS.
12290 APTIC NO. 29737

MEASUREMENT OF GASEOUS AND PARTICULATE FLUORINE EMISSIONS.

12322 APTIC NO. 29738

TRIAL CONSTRUCTION OF NON-DISPERSION TYPE VISIBLE LIGHT GAS ANALYZE AND DETERMINATION OF NITROGEN DIOXIDE, CHLORINE, AND BROMINE.

12303 APTIC NO. 29762

FLUOROMETRIC DETERMINATION OF BROMINE: APPLICATION TO MEASUREMENT OF BROMINE AEROSOLS.

12255 APTIC NO. 29811

ENVIRONMENTAL POLLUTION AND ITS MEASUREMENTS (II).

12338 APTIC NO. 29843

AUTOMATIC MEASURING APPARATUS OF FLUORIDE GASSES IN AIR.

12299 APTIC NO. 29966

CHEMICAL PROCESSES AT THE AIR-SEA INTERFACE: THE BEHAVIOR OF FLUORINE.

12468 APTIC NO. 30126

THE EFFECTS OF LOW LEVEL FLUORINE POLLUTION IN A MOUNTAIN VALLEY.

12595 APTIC NO. 29991

THE COSTS FOR MAINTENANCE OF CLEAN AIR. THE INFLUENCE OF SOCIAL COSTS ON THE SELECTION OF AN INDUSTRIAL SITE.

12633 APTIC NO. 29923

PRESENT SITUATION OF ADMINISTRATION CONCERNING POLLUTIONS.

12648 APTIC NO. 29598

MATERIALS FOR REFERENCE ABOUT ENVIRONMENTAL POLLUTION CONTROL.

12651 APTIC NO. 29818

HALOGENATED HYDROCARBONS

PESTICIDES IN AIR. VOLATILIZATION OF SOIL-APPLIED DDT AND DDD FROM FLOODED AND NONFLOODED PLOTS.

12047 APTIC NO. 29620

A NEW ENVIRONMENTAL POLLUTANT - POLYCHLORINATED BIPHENYLS (PCB).

12044 APTIC NO. 29984

ON DISPOSAL OF PLASTIC WASTES (PVC) BY FLUID LAYER OF MEDIUM.

12074 APTIC NO. 29449

QUANTITATIVE ANALYSIS OF NO IN ATMOSPHERE - ON CHANGES IN SALTZMAN COEFFICIENT WITH CHANGE IN COMPOSITION OF SALTZMAN REAGENTS.

12308 APTIC NO. 29480

METHANESULFENYL CHLORIDE. V. THE SPONTANEOUS DECOMPOSITION OF METHANESULFENYL CHLORIDE AND METHYLSULFUR TRICHLORIDE.

12485 APTIC NO. 29674

PROGRESS REPORT. JANUARY-DECEMBER 1969.

12555 APTIC NO. 28850

HARBORS

A COMPREHENSIVE SAMPLING SYSTEM FOR STUDYING THE RELATION BETWEEN VISIBILITY, METEOROLOGICAL PARAMETERS AND ATMOSPHERIC POLLUTION.

12276 APTIC NO. 30082

HAWAII

CARBON MONOXIDE IN RAINWATER.

12460 APTIC NO. 29880

HAZE

MICROSTRUCTURE OF ATMOSPHERIC SURFACE LAYER AEROSOLS.

12433 APTIC NO. 29668

RADIANCE AND POLARIZATION OF LIGHT REFLECTED FROM OPTICALLY THICK CLOUDS.

12429 APTIC NO. 29915

SOME RESULTS OF LIDAR PROBING OF THE TROPOSHERE.

12434 APTIC NO. 30105

HEALTH IMPAIRMENT

JOINT DEMONSTRATION OF METHODS FOR EXTINGUISHMENT AND CONTROL OF BURNING COAL REFUSE PILES. (FINAL REPORT).

12066 APTIC NO. 30057

METHODS FOR MEASURING AND EVALUATING ODOROUS AIR POLLUTANTS AT THE SOURCE AND IN THE AMBIENT AIR.

12246 APTIC NO. 29891

EPISODE 104.

12410 APTIC NO. 29695

TOWARD A RATIONAL POWER POLICY: RECONCILING NEEDS FOR ENERGY AND ENVIRONMENTAL PROTECTION.

12403 APTIC NO. 29986

EFFECTS OF LOW CARBON MONOXIDE CONCENTRATIONS IN MAN.

12533 APTIC NO. 29609

SIGNAL PROCESSING TECHNIQUES FOR ESTIMATING PARAMETERS OF CERTAIN BIOLOGICAL MODELS.

12570 APTIC NO. 29997

CRITERIA OF INJURIOUSNESS AS THE BASIS OF STANDARDS OF THE HYGIENE OF THE AIR.

12642 APTIC NO. 29574

INTERNATIONAL SYMPOSIUM ON THE HYGIENE OF THE AIR OF THE MEMBER COUNTRIES OF THE COUNCIL FOR MUTUAL ECONOMIC AID.

12679 APTIC NO. 29593

ENVIRONMENT PRESERVATION - FROM THE ECOLOGICAL POINT OF VIEW.

12678 APTIC NO. 29961

HEALTH STATISTICS

SOME RECENT TOPICS IN AIR POLLUTION AND HEALTH IN LONDON.

12562 APTIC NO. 29882

STUDY ON THE EFFECTS OF AIR POLLUTION ON HUMAN BODY--WITH SPECIAL REFERENCE TO OBJECTIVE, COMPARATIVE STUDY OF ALL THE INHABITANTS BY CHEST X-RAY RINDINGS.

12554 APTIC NO. 29904

HEAT OF COMBUSTION

COMBUSTION REGULARITY A KEY TO SPARK-IGNITION ENGINE EMISSIONS REDUCTION? Preprint, Academia R. P. R., Bucharest, 15p., 1970. 4 refs. (Presented at the Internal Combustion Engines Conference, 2nd International, Bucharest (Rumania), 1970.)

12023 APTIC NO. 27641

CO BOILER OF FLUIDIZED BED TYPE CATALYTIC CRACKING PROCESS PRODUCIN NO LEAD GASOLINE.

12237 APTIC NO. 29535

HEAT TRANSFER

AMMONIA DISPOSAL--COKE PLANTS.

12012 APTIC NO. 29627

OPERATING EXPERIENCE OF EVAPORATIVE COOLERS SERVING CUPOLAS AIR POLLUTION CONTROL SYSTEMS.

12034 APTIC NO. 30032

TWO NEW PROCESSES FOR RECOVERY OF SULPHUR OXIDES FROM SMELTER GASES.

12207 APTIC NO. 29200

PROCESS FOR THE SEPARATION OF SULFUR FROM GAS.

12052 APTIC NO. 29273

CARBON MONOXIDE AS A COMBUSTION CONTROL PARAMETER.

12072 APTIC NO. 29471

HEAT EXTRACTION AIDS DEPOLLUTION OF GASES AND WATER IN CHEVROLET FOUNDRY.

12097 APTIC NO. 29523

THE NEW PLANT FOR PRODUCTION OF SULFUR DIOXIDE AT LEVERKUSEN.

12203 APTIC NO. 29577

MODERN SULFURIC ACID TECHNOLOGY.

12093 APTIC NO. 29607

POLLUTION REGULATIONS AND THEIR EFFECT ON VEHICLE PREPARATION.

12112 APTIC NO. 29659

SEPARATION OF CO_2 AND H_2S FROM GAS MIXTURES.

12086 APTIC NO. 29752

ALKALI AND HEAT RECOVERY IN THE FLUE GASES FROM RECOVERY BOILERS.

12193 APTIC NO. 29852

NEW PROCESS OFFERS 99.9% SULPHUR RECOVERY.

12062 APTIC NO. 29855

THE NEW DUPLEX IRON MELTING PLANT AT THE M. BUSCH KG IN WEHRSTAPEL.

12094 APTIC NO. 29861

BALL BLANKETS FOR EFFLUENT TREATMENT.

12083 APTIC NO. 30034

ON A DUST-COLLECTING DEVICE FOR A FERROSILICON FURNACE.

12219 APTIC NO. 30086

ANNUAL SURVEY ON CUPOLA FURNACES, SEQUENCE EIGHT.

12101 APTIC NO. 30101

SIMPLIFIED TECHNIQUES IN AIR POLLUTION MEASUREMENT.

12289 APTIC NO. 29771

THERMAL AND DIFFUSIONAL EFFECTS IN NONCATALYTIC SOLID GAS REACTIONS.

12522 APTIC NO. 29612

HEIGHT FINDING

STANDARDS OF AIR POLLUTION.

12643 APTIC NO. 29776

HEMATOLOGY

THE ANALYSIS OF MERCURY IN URINE, BLOOD, WATER, AND AIR.

12306 APTIC NO. 29652

RAPID ASSESSMENT OF TESTS OF POLLUTANT EFFECTS IN MAN.

12536 APTIC NO. 29431

LOW LEVEL CARBON MONOXIDE EXPOSURE AND HUMAN PSYCHOMOTOR PERFORMANCE.

12573 APTIC NO. 29473

LEAD IN THE ENVIRONMENT.
12564 APTIC NO. 29493

INTRODUCTION AND GENERAL DESCRIPTION OF THE STUDY AND OF THE PROCEDURES FOR PROLONGED EXPOSURE TO CARBON MONOXIDE AND HYPOXIA.
12530 APTIC NO. 29503

OXYGEN AFFINITY AND ACID-BASE STATUS OF HUMAN BLOOD DURING EXPOSURE TO HYPOXIA AND CARBON MONOXIDE.
12567 APTIC NO. 29528

INFLUENCE OF PROLONGED CARBON MONOXIDE EXPOSURE AND ALTITUDE HYPOXIA ON SERUM LIPIDS IN MAN.
12558 APTIC NO. 29529

STUDIES ON THE INFLUENCE OF AIR POLLUTION ON THE HEALTH OF THE PEOPLE AT BELOSLAV, DISTRICT OF VARNA, PEOPLE S REPUBLIC OF BULGARIA.
12557 APTIC NO. 29573

THE INFLUENCE OF AIR POLLUTION ON PUBLIC HEALTH.
12586 APTIC NO. 29589

EFFECTS OF LOW CARBON MONOXIDE CONCENTRATIONS IN MAN.
12533 APTIC NO. 29609

INFLUENCE OF PROLONGED CARBON MONOXIDE EXPOSURE AND HIGH ALTITUDE ON THE COMPOSITION OF BLOOD AND URINE IN MAN.
12559 APTIC NO. 29613

PLASMA VOLUME AND VASCULAR PERMEABILITY DURING HYPOXIA AND CARBON MONOXIDE EXPOSURE.
12582 APTIC NO. 29614

CARBON MONOXIDE AS TOXIC GAS.
12538 APTIC NO. 29640

SEMI-AUTOMATIC DETERMINATION OF LEAD IN WIDE BLOOD.
12565 APTIC NO. 29663

ITAI-ITAI (OUCH-OUCH) DISEASE AND CADMIUM POLLUTION IN JAPAN.
12581 APTIC NO. 29673

LEAD MEN HEADING TOWARD DESTRUCTION--SPREADING OMINOUS METAL POLLUTIONS.
12569 APTIC NO. 29789

SOME PLANS FOR FUTURE STUDIES FOR LOW LEVEL OF LEAD ON THE HUMAN BEING.
12553 APTIC NO. 29815

FOUR-ALKYL LEAD AND ENVIRONMENTAL POLLUTION.
12588 APTIC NO. 29825

RECENT RESEARCH INTO THE EFFECT OF LOW LEVEL CARBON MONOXIDE EXPOSURE ON PSYCHOMOTOR PERFORMANCE IN HEALTHY HUMANS.
12574 APTIC NO. 29846

THE STUDY OF THE POLLUTED AIR INFLUENCE ON CHILDREN S HEALTH IN RUHRDISTRICT.
12544 APTIC NO. 29899

EXPERIMENTAL STUDIES ON THE HEALTH EFFECTS OF AUTO EXHAUST GAS IN LOW CONCENTRATIONS. (REPORT 1) PRELIMINARY EXPERIMENT.
12589 APTIC NO. 29921

EFFECTS OF ATMOSPHERIC LEAD ON TRAFFIC POLICEMEN IN A MEDIUM SIZED CITY.
12566 APTIC NO. 29958

SOME HEALTH SURVEY RESULTS OF UNDERGROUND GARAGE WORKERS.
12568 APTIC NO. 30074

HEMOGLOBIN INTERACTIONS

OXYGEN AFFINITY AND ACID-BASE STATUS OF HUMAN BLOOD DURING EXPOSURE TO HYPOXIA AND CARBON MONOXIDE.
12567 APTIC NO. 29528

THE INFLUENCE OF AIR POLLUTION ON PUBLIC HEALTH.
12586 APTIC NO. 29589

HEXANES

ANALYSIS OF HC OF LOW GRADE IN ATMOSPHERE.
12391 APTIC NO. 29482

INSTRUMENT FOR STUDYING THE ACTION OF EXHAUST GASES DILUTED IN THE AIR, ON BACTERIAL, CELLULAR, AND TISSULAR CULTURES.
12476 APTIC NO. 29849

HI-VOL SAMPLERS

DETERMINATION OF LEAD CONTENTS IN AUTOMOBILE EXHAUST GAS.
12013 APTIC NO. 29661

METHOD TO ARREST AND REMOVE WHITE SMOKE PRODUCED FROM MOLTEN ZINC PLATING PROCESS.
12135 APTIC NO. 29940

PROGRESS IN MEASUREMENT OF AIR POLLUTION.
12350 APTIC NO. 29748

FLUOROMETRIC DETERMINATION OF BROMINE: APPLICATION TO MEASUREMENT OF BROMINE AEROSOLS.
12255 APTIC NO. 29811

MEASUREMENT OF ATMOSPHERIC DUST BY LIGHT SCATTERING METHOD AND HIGH VOLUME SAMPLER METHOD.
12357 APTIC NO. 29864

A SHORT TERM DETERMINATION OF BENZO(A)PYRENE AND BENZO(K) FLUORANTHENE IN AIR POLLUTANTS.
12319 APTIC NO. 29965

DETERMINATION OF POLYNUCLEAR AROMATICS IN SUSPENDED PARTICLES.
12393 APTIC NO. 29462

BENZPYRENE AND OTHER AROMATIC HYDROCARBONS IN THE DUST OF POLISH TOWNS.
12385 APTIC NO. 29569

STATISTICAL ANALYSES OF AIR POLLUTION SAMPLING FREQUENCY IN AN EPIDEMIOLOGIC STUDY.
12378 APTIC NO. 29655

A REPORT OF THE PERIODIC MEASUREMENT OF SOOT AND DUST, AND SULFUR OXIDES IN THE AIR AROUND THE HOSPITAL.
12381 APTIC NO. 29794

SUSPENDED PARTICULATES IN OSAKA CITY.
12375 APTIC NO. 29853

SEASONAL VARIATION OF THE CONCENTRATION OF HEAVY METALS IN SUSPENDED DUST ON THE MAIN STREETS.
12384 APTIC NO. 30025

THE PRESENT RESULTS OF DETERMINATIONS OF 3,4-BENZPYRENE IN THE AIR OVER BUDAPEST.
12631 APTIC NO. 29590

HIGHWAYS

UTILIZATION OF CATALYST IN AIR POLLUTION CONTROL (5).
12240 APTIC NO. 29898

LEAD POLLUTION AND PHOTOCHEMICAL SMOG IN TOKYO.
12376 APTIC NO. 29647

STUDIES ON AIR POLLUTION DUE TO AUTOMOBILE EXHAUST. REPORT 15: AIR POLLUTION AT THE VICINITY OF BOOTHS IN MEISHIN HIGHWAY.
12389 APTIC NO. 30075

NEW EYE ON THE AIR.
12412 APTIC NO. 29644

HOURLY

A MEASUREMENT GRID FOR AIR POLLUTION IN THE MOUTH OF THE RIVER RHINE IN ROTTERDAM.
12333 APTIC NO. 29460

A COMPREHENSIVE SAMPLING SYSTEM FOR STUDYING THE RELATION BETWEEN VISIBILITY, METEOROLOGICAL PARAMETERS AND ATMOSPHERIC POLLUTION.
12276 APTIC NO. 30082

ANALYSIS OF HC OF LOW GRADE IN ATMOSPHERE.
12391 APTIC NO. 29482

LEAD POLLUTION AND PHOTOCHEMICAL SMOG IN TOKYO.
12376 APTIC NO. 29647

URBAN POLLUTION BY AUTOMOBILE EXHAUST GAS.
12387 APTIC NO. 29744

REPORT FROM THE NETHERLANDS: MEASUREMENT GRID FOR AIR POLLUTION.
12364 APTIC NO. 29798

DISTRIBUTION OF LEAD IN THE AIR NEAR CITY ROADS.
12388 APTIC NO. 29918

STUDIES ON AIR POLLUTION DUE TO AUTOMOBILE EXHAUST. REPORT 15: AIR POLLUTION AT THE VICINITY OF BOOTHS IN MEISHIN HIGHWAY.
12389 APTIC NO. 30075

ON PLUMBIC POLLUTION OF MUNICIPAL ATMOSPHERE--BEHAVIORS OF PLUMBIC COMPOUND AS AEROSOL.
12431 APTIC NO. 30073

PATHOLOGICAL STUDY ON THE EXPERIMENTAL RABBITS AT AIR-POLLUTED AREA IN YOKKAICHI.
12590 APTIC NO. 29502

AIR POLLUTION BY TRACE METALS IN JAPAN.
12561 APTIC NO. 29816

STANDARDS OF AIR POLLUTION.
12643 APTIC NO. 29776

COLLECTION OF LEGISLATIONS RELATED WITH MITI CONCERNING POLLUTIONS.
12646 APTIC NO. 29504

HUMIDITY

ON CONDITIONS FOR PROPER USE OF ACTIVATED CARBON AS AN AIR PURIFICATION AGENT (2) - ITS EFFICIENCY FOR REMOVAL OF SO2 GAS.
12113 APTIC NO. 29496

PERFORMANCE OF CHARCOAL-IMPREGNATED FILTER PAPER TYPE CP-20 FOR COLLECTING AIRBORNE RADIOIODINE.
12185 APTIC NO. 29870

ELECTROSTATIC FIELD BREAKDOWN PHENOMENA IN APPLYING CHARGED PARTICLES.
12236 APTIC NO. 30006

INVESTIGATION ON THE MEASURING ERRORS OF CONDUCTOMETRIC SULFUR DIOXIDE ANALYZER USED FOR AIR POLLUTION MONITOR.
12356 APTIC NO. 29398

OXIDATION OF NITROGEN MONOXIDE.
12320 APTIC NO. 29676

SIMPLIFIED TECHNIQUES IN AIR POLLUTION MEASUREMENT.
12289 APTIC NO. 29771

TESTS WITH A SAMPLING AND MEASUREMENT METHOD FOR ROUTINE DETERMINATION OF FLUORINE IN THE LOWER ATMOSPHERE.
12262 APTIC NO. 29887

A COMPREHENSIVE SAMPLING SYSTEM FOR STUDYING THE RELATION BETWEEN VISIBILITY, METEOROLOGICAL PARAMETERS AND ATMOSPHERIC POLLUTION.
12276 APTIC NO. 30082

FORMATION OF FOG ON THE NUCLEI OF HUMIDITY CONDENSATION.
12453 APTIC NO. 29636

MICROSTRUCTURE OF ATMOSPHERIC SURFACE LAYER AEROSOLS.
12433 APTIC NO. 29668

INTERNATIONAL CONFERENCE ON CONDENSATION NUCLEI AND ICE-FORMING NUCLEI.
12454 APTIC NO. 29699

EFFECTS OF ATMOSPHERIC CONDITIONS ON AUTOMOBILE EXHAUST GAS COMPOSITIONS.
12461 APTIC NO. 29893

DISCUSSIONS DEPTH OF THE BOUNDARY LAYER.
ERROR

CHEMICAL PROCESSES AT THE AIR-SEA INTERFACE: THE BEHAVIOR OF FLUORINE.
12468 APTIC NO. 30126

COAGULATION OF DUST PARTICLES, IN PARTICULAR BY AEROSOLS OF SEA WATER SALT.
ERROR

THE ABSORPTION COEFFICIENT OF A GASEOUS SUBSTANCE ON A SWARMING FILM.
12479 APTIC NO. 29994

EFFECTS OF ATMOSPHERIC FACTORS AND OF SO2 AND AIRBORNE DUST EMISSIONS ON INTRABRONCHIAL FLOW RESISTANCE AND INTRATHORACAL GAS VOLUME OF SOUND AND SICK MEN.
12571 APTIC NO. 29048

PATIENT ADVICE DURING ACUTE AIR POLLUTION EPISODE.
12531 APTIC NO. 29878

AIR POLLUTION AND ATMOSPHERIC CORROSION.
12613 APTIC NO. 29222

ATMOSPHERIC CORROSION OF SILVER.
12614 APTIC NO. 29951

CORROSION OF NACL-CONTAMINATED FE IN HUMID ATMOSPHERE OF LOW O2 CONTENT.
12621 APTIC NO. 30112

VALUE ANALYSIS OF COAL.
12629 APTIC NO. 30122

HYDRIDES

ELIMINATION OF OXIDES CONTAINED IN CERTAIN RESIDUAL INDUSTRIAL GASES.
12129 APTIC NO. 30043

HYDROCHLORIC ACID

AIR POLLUTANTS GENERATED IN INTRA-FURNACE COMBUSTION.
12020 APTIC NO. 29532

PHYSICAL-CHEMICAL PROBLEMS OF AIR POLLUTION.
11996 APTIC NO. 29786

REMOVAL OF CHLORINE FROM GASES.
12177 APTIC NO. 29802

A GAS ANALYSER FOR THE MEASUREMENT OF IMPURITIES IN AIR.
12277 APTIC NO. 29581

COMPLEX ALKALI IRON SULFATES A CONTRIBUTION TO THE THERMODYNAMICS OF FIRESDIDE HIGH-TEMPERATURE CORROSION.
12616 APTIC NO. 29783

COLLECTION OF LEGISLATIONS RELATED WITH MITI CONCERNING POLLUTIONS.
12646 APTIC NO. 29504

MATERIALS FOR REFERENCE ABOUT ENVIRONMENTAL POLLUTION CONTROL.
12651 APTIC NO. 29818

HYDRODESULFURIZATION

OIL REFINERS PREPARE FOR ANIT-POLLUTION CONTROLS.
12040 APTIC NO. 29127

GULF RESIDUAL OIL HDS PROCESS.
12136 APTIC NO. 29501

HYDROGENIZATION DESULFURIZATION METHOD OF HEAVY HC.
12189 APTIC NO. 29603

ASPHALTENE HYDRODESULFURIZATION WITH SMALL CATALYST PARTICLES DISPOSED IN A GUARD CHAMBER-MAIN REACTOR SYSTEM.
12121 APTIC NO. 29719

ESSO/UNION FUEL OIL HYDRODESULFURIZATION PROCESSES. PART II: COMMERCIAL EXPERIENCE WITH GO-FINING.
12096 APTIC NO. 29926

INVESTIGATION OF HEAVY OIL DESULFURIZATION IN FIXED-BED CONTACT REACTORS.
12196 APTIC NO. 29931

CONTACT HYDRODESULFURIZATION OF PETROLEUM RESIDUAL OIL.
12200 APTIC NO. 29932

HYDRODESULFURIZATION OF HEAVY QUALITY OIL, RESIDUAL OIL, ETC.. (Jushitsuyu, zansayu to no suisokadatsuryuho). Text in Japanese. (Ishikawajima-Harima Heavy Industries (Japan)) Japan. Pat. Sho 46-819. 3p., Jan. 9, 1971. (Appl. Dec. 25, 1967, claims not given).
12218 APTIC NO. 29933

ESSO/UNION FUEL OIL HYDRODESULFURIZATION PROCESSES. PART I: PROCESS APPLICATIONS AND DEVELOPMENT.
12180 APTIC NO. 29954

METHOD TO MANUFACTURE CATALYST FOR DESULFURIZATION BY HYDROGEN ADDITION OF LIQUID HYDROCARBON.
12234 APTIC NO. 29974

STUDY ON THE DIRECT DESULFURIZATION OF HEAVY OIL.
12159 APTIC NO. 29989

UNLEADED GASOLINE AND SMOG-FREE AUTOS--HOW AND WHY.
12644 APTIC NO. 30035

HYDROFLUORIC ACID

AIR POLLUTANTS GENERATED IN INTRA-FURNACE COMBUSTION.
12020 APTIC NO. 29532

PHYSICAL-CHEMICAL PROBLEMS OF AIR POLLUTION.
11996 APTIC NO. 29786

ADSORPTIVITY OF DESULFURIZING ACTIVATED CARBON FOR SULFUROUS ACID GAS (II) - EFFECT OF THE ADSORPTION - RINSING PROCESS ON THE ADSORPTIVITY.
12238 APTIC NO. 29788

ACID MIST PRECIPITATOR MADE OF TEFLON FIBER.
12061 APTIC NO. 29833

EXPERIENCES WITH FLUORINE EMISSION MEASUREMENTS.
12290 APTIC NO. 29737

MEASUREMENT OF GASEOUS AND PARTICULATE FLUORINE EMISSIONS.
12322 APTIC NO. 29738

TESTS WITH A SAMPLING AND MEASUREMENT METHOD FOR ROUTINE DETERMINATION OF FLUORINE IN THE LOWER ATMOSPHERE.
12262 APTIC NO. 29887

AUTOMATIC MEASURING APPARATUS OF FLUORIDE GASSES IN AIR.
12299 APTIC NO. 29966

ATMOSPHERIC REACTIONS AND SCAVENGING PROCESSES.
12426 APTIC NO. 29774

PROBLEMS OF FLUORINE EMISSION MEASUREMENTS.
12608 APTIC NO. 29736

COLLECTION OF LEGISLATIONS RELATED WITH MITI CONCERNING POLLUTIONS.
12646 APTIC NO. 29504

MATERIALS FOR REFERENCE ABOUT ENVIRONMENTAL POLLUTION CONTROL.
12651 APTIC NO. 29818

HYDROGEN

AIR POLLUTANTS GENERATED IN INTRA-FURNACE COMBUSTION.
12020 APTIC NO. 29532

ATMOSPHERIC POLLUTION IN HEADINGS FOLLOWING SHOTFIRING.
12024 APTIC NO. 29678

EXPERIMENTS CONCERNING STOICHIOMETRIC COMBUSTION IN OIL-FIRED FURNACES OF FRENCH POWER PLANTS.
12090 APTIC NO. 29513

ADSORPTION OF HYDROGEN AND CARBON MONOXIDE AND THEIR MIXTURES ON IRON FISCHER-TROPSCH CATALYSTS. PART I: SYNTHESIS EXPERIMENTS AND ADSORPTION STUDIES WITH HYDROGEN AND CARBON MONOXIDE ON PROMOTED AND UNPROMOTED IRON CATALYSTS.
12216 APTIC NO. 29701

H-OIL AS A TOOL FOR LOW SULFUR FUEL PRODUCTION.
12126 APTIC NO. 29808

INVESTIGATION OF HEAVY OIL DESULFURIZATION IN FIXED-BED CONTACT REACTORS.
12196 APTIC NO. 29931

CONTACT HYDRODESULFURIZATION OF PETROLEUM RESIDUAL OIL.
12200 APTIC NO. 29932

HYDRODESULFURIZATION OF HEAVY QUALITY OIL, RESIDUAL OIL, ETC.. (Jushitsuyu, zansayu to no suisokadatsuryuho). Text in Japanese. (Ishikawajima-Harima Heavy Industries (Japan)) Japan. Pat. Sho 46-819. 3p., Jan. 9, 1971. (Appl. Dec. 25, 1967, claims not given).
12218 APTIC NO. 29933

COMBUSTION OF WASTES CENTERING AROUND REMOVAL OF NOXIOUS GAS.
12077 APTIC NO. 29985

REACTOR DEVICE FOR HEAVY OIL DESULFURIZATION.
12149 APTIC NO. 29987

KINETICS OF RECOVERING SULFUR FROM THE SPENT SEED IN AN MHD POWER PLANT.
12118 APTIC NO. 30048

DISPOSAL OF HC FROM OIL CONTAINING RESIDUAL OIL AFTER DISTILLATION USING HYDROGEN.
12162 APTIC NO. 30095

LOSS OF MERCURY FROM CHLORALKALI PLANTS.
12120 APTIC NO. 30117

OXIDATION OF NITROGEN MONOXIDE.
12320 APTIC NO. 29676

RAYLEIGH SCATTERING OF RUBY-LASER LIGHT BY NEUTRAL GASES.
12450 APTIC NO. 28884

PARTICLE AND DEUTERIUM CONTENT IN SNOW.
12449 APTIC NO. 29775

INVESTIGATION OF NITRIC OXIDE FORMATION KINETICS IN COMBUSTION PROCESSES: THE HYDROGEN-OXYGEN-NITROGEN REACTION.
12477 APTIC NO. 29610

INITIATION RATE FOR SHOCK-HEATED HYDROGEN-OXYGEN CARBON MONOXIDE- ARGON MIXTURES AS DETERMINED BY OH INDUCTION TIME MEASUREMENTS.
12490 APTIC NO. 29700

HETEROGENEOUS CATALYSIS INVOLVING ASTOICHIOMETRIC COMPONENTS. IV. INITIATION EFFECTS OF CARBON MONOXIDE AND OXYGEN OXIDE IN THE HYDROPOLYMERIZATION OF PROPENE AND ISOBUTENE.
12488 APTIC NO. 29871

HYDROGEN SULFIDE

PROBLEMS OF PUBLIC NUISANCE CAUSED BY BAD ODORS IN HYOGO PREFECTURE.
12029 APTIC NO. 29599

AMMONIA DISPOSAL--COKE PLANTS.
12012 APTIC NO. 29627

INVESTIGATION OF HEAVY METAL POLLUTION IN IWAKI CITY.
12007 APTIC NO. 29787

PROCESS FOR THE SEPARATION OF SULFUR FROM GAS.
12052 APTIC NO. 29273

OXIDATION OF SODIUM SULFIDE AND MERCAPTIDE IN BLACK LIQUOR.
12071 APTIC NO. 29278

DESULFURIZATION OF LIQUEFIED PROPANE GAS. MOLECULAR SIEVE PROCESS.
12053 APTIC NO. 29617

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

SEPARATION OF CO_2 AND H_2S FROM GAS MIXTURES.
12086 APTIC NO. 29752

HYDRODESULFURIZATION OF HEAVY QUALITY OIL, RESIDUAL OIL, ETC.. (Jushitsuyu, zansayu to no suisokadatsuryuho). Text in Japanese. (Ishikawajima-Harima Heavy Industries (Japan)) Japan. Pat. Sho 46-819. 3p., Jan. 9, 1971. (Appl. Dec. 25, 1967, claims not given).
12218 APTIC NO. 29933

THE EFFECT OF CATALYST POISONS ON THE ACTIVITY OF CARBON MONOXIDE SHIFT CATALYSTS.
12212 APTIC NO. 29944

KINETICS OF RECOVERING SULFUR FROM THE SPENT SEED IN AN MHD POWER PLANT.
12118 APTIC NO. 30048

PROCESS FOR REMOVING SULPHUR FROM GASES.
12139 APTIC NO. 30049

PULPERS APPLY ODOR CONTROL.
12104 APTIC NO. 30062

REDUCING SO_2 EMISSION FROM STATIONARY SOURCES.
12098 APTIC NO. 30102

THE MEASUREMENT OF ATMOSPHERIC POLLUTION IN GERMANY.
12340 APTIC NO. 29066

ON THE EFFECT OF ACCOMPANYING GASES IN QUANTITATIVE ANALYSIS OF HYDROGEN SULFIDE USING METHYLENE BLUE.
12343 APTIC NO. 29505

A GAS ANALYSER FOR THE MEASUREMENT OF IMPURITIES IN AIR.
12277 APTIC NO. 29581

ANALYZERS FOR MONITORING AIR QUALITY IN POLLUTION.
12272 APTIC NO. 29634

ON MEASUREMENT OF ODOR.
12256 APTIC NO. 29726

SIMPLIFIED TECHNIQUES IN AIR POLLUTION MEASUREMENT.
12289 APTIC NO. 29771

ENVIRONMENTAL POLLUTION AND ITS MEASUREMENTS (II).
12338 APTIC NO. 29843

A SIMPLE TECHNIQUE FOR MEASURING MEAN H_2S CONCENTRATION.
12275 APTIC NO. 29844

AUTOMATED ANALYSIS SYSTEMS MAKES KRAFT EMISSION MEASUREMENTS EASY.
12325 APTIC NO. 29913

FILTER METHOD FOR THE MEASUREMENT OF ATMOSPHERIC HYDROGEN SULFIDE.
12330 APTIC NO. 30004

GAS CHROMATOGRAPHY OF REACTIVE SULFUR GASES IN AIR AT THE PARTS- PER-BILLION LEVEL.
12347 APTIC NO. 30065

CORRECTION: DETERMINATION OF HYDROGEN SULFIDE, SULFUR DIOXIDE, CARBONYL SULFIDE, CARBON DISULFIDE, AND CARBON DIOXIDE IN A GAS MIXTURE.
12341 APTIC NO. 30120

ATMOSPHERIC REACTIONS AND SCAVENGING PROCESSES.
12426 APTIC NO. 29774

A FEW OBSERVATION ON THE GENERATION MECHANISM OF OBNOXIOUS ODOR.
12517 APTIC NO. 29649

THE STUDY OF THE REACTION OF HYDROGEN SULPHIDE WITH ATOMIC OXYGEN USING EMISSION SPECTRUM.
12516 APTIC NO. 29884

SIMULTANEOUS ABSORPTION OF TWO GASES ACCOMPANIED BY REVERSIBLE INSTANTANEOUS CHEMICAL REACTIONS.
12504 APTIC NO. 29917

COMPLEX ALKALI IRON SULFATES A CONTRIBUTION TO THE THERMODYNAMICS OF FIRESDIDE HIGH-TEMPERATURE CORROSION.
12616 APTIC NO. 29783

ATMOSPHERIC CORROSION OF SILVER.
12614 APTIC NO. 29951

SULFUR RECOVERY IN THE MANUFACTURE OF PIPELINE GAS FROM COAL.
12635 APTIC NO. 29143

COLLECTION OF LEGISLATIONS RELATED WITH MITI CONCERNING POLLUTIONS.
12646 APTIC NO. 29504

MATERIALS FOR REFERENCE ABOUT ENVIRONMENTAL POLLUTION CONTROL.
12651 APTIC NO. 29818

HYDROGENATION

OIL REFINERS PREPARE FOR ANIT-POLLUTION CONTROLS.
12040 APTIC NO 29127

COUNTERMEASURES ON PREVENTION OF INDUSTRIAL POLLUTIONS--PART II ON SULFURIC ACID GAS.
12210 APTIC NO. 29646

HYDROLYSIS

A METER FOR THE SITE DETERMINATION OF HYDROLYSABLE FLUORIDES IN SULPHUR HEXAFLUORIDE.
12336 APTIC NO. 30007

HYDROSPHERE

CHEMICAL PROCESSES AT THE AIR-SEA INTERFACE: THE BEHAVIOR OF FLUORINE.
12468 APTIC NO. 30126

HYDROXIDES

COMPARISON OF THE CATALYTIC ACTIVITY OF MANGANESE DIOXIDE OF ELECTROLYTIC ORIGIN AND OF MANGANESE HYDROXIDE IN THE OXIDATION OF CARBON OXIDES. IV. ADSORPTION AND DESORPTION OF THE REAGENTS AND THE PRODUCTS OF THE REACTION ON MANGANESE HYDROXIDE.
12192 APTIC NO. 29506

NEW METHOD OF MANUFACTURING CATALYST FOR EXHAUST GAS.
12133 APTIC NO. 29733

MUFFLER FOR REMOVING PARTICULATE LEAD FROM EXHAUST GASES OF INTERNAL COMBUSTION ENGINES.
12168 APTIC NO. 29920

STUDIES ON AIR POLLUTION CONTROL BY ADDITIVE INJECTION. PART II - PREVENTION OF CLOGGING AT HIGH TEMPERATURE HEATING SURFACE OF BOILER BY ADDING MG(OH)2 POWDER.
12075 APTIC NO. 29941

STUDY ON DESULFURIZATION BY THE INJECTION OF LIMESTONE POWDER INTO FURNACE OF OIL FIRING BOILER (PART I).
12145 APTIC NO. 30131

JIS ANALYTICAL PROCESS FOR NITROGEN OXIDES IN WASTE GAS.
12355 APTIC NO. 29677

THE MECHANISM OF ATMOSPHERIC RUSTING AND THE EFFECT OF CU AND P ON THE RUST FORMATION OF LOW ALLOY STEELS.
12615 APTIC NO. 29631

HYPOXIA

INTRODUCTION AND GENERAL DESCRIPTION OF THE STUDY AND OF THE PROCEDURES FOR PROLONGED EXPOSURE TO CARBON MONOXIDE AND HYPOXIA.
12530 APTIC NO. 29503

OXYGEN AFFINITY AND ACID-BASE STATUS OF HUMAN BLOOD DURING EXPOSURE TO HYPOXIA AND CARBON MONOXIDE.
12567 APTIC NO. 29528

INFLUENCE OF PROLONGED CARBON MONOXIDE EXPOSURE AND ALTITUDE HYPOXIA ON SERUM LIPIDS IN MAN.
12558 APTIC NO. 29529

INFLUENCE OF PROLONGED CARBON MONOXIDE EXPOSURE AND HIGH ALTITUDE ON THE COMPOSITION OF BLOOD AND URINE IN MAN.
12559 APTIC NO. 29613

PLASMA VOLUME AND VASCULAR PERMEABILITY DURING HYPOXIA AND CARBON MONOXIDE EXPOSURE.
12582 APTIC NO. 29614

RENAL FUNCTION DURING PROLONGED EXPOSURE TO HYPOXIA AND CARBON MONOXIDE. I. GLOMERULAR FILTRATION AND PLASMA FLOW.
12576 APTIC NO. 29615

CAPILLARY FILTRATION RATE ON THE HUMAN CALF DURING EXPOSURE TO CARBON MONOXIDE AND HYPOXIA (3454 M).
12578 APTIC NO. 29804

RENAL FUNCTION DURING PROLONGED EXPOSURE TO HYPOXIA AND CARBON MONOXIDE. II. ELECTROLYTE HANDLING.
12577 APTIC NO. 29805

CIRCULATION, METABOLISM, AND VENTILATION DURING PROLONGED EXPOSURE TO CARBON MONOXIDE AND TO HIGH ALTITUDE.
12560 APTIC NO. 29869

I

ICE

INTERACTIONS OF CLOUD CONDENSATION NUCLEI AND ICE NUCLEI WITH CLOUD AND PRECIPITATION ELEMENTS: A REVIEW.
12443 APTIC NO. 29692

SCAVENGING BY SNOW AND ICE CRYSTALS.
12456 APTIC NO. 29707

CONTINUOUS CHARGED CLOUD-PARTICLE SAMPLER.
12451 APTIC NO. 29712

PARTICLE AND DEUTERIUM CONTENT IN SNOW.
12449 APTIC NO. 29775

ILLINOIS

LONG RANGE PLANNING IN AIR RESOURCE MANAGEMENT.
12657 APTIC NO. 30056

IMMUNOLOGY

AIRBORNE INFLUENZA PR8-A VIRUS INFECTIONS IN ACTIVELY IMMUNIZED MICE.
12167 APTIC NO. 29718

EXPERIMENTAL STUDIES ON THE EFFECT OF SMALL DOSES OF LEAD AND SULFUR DIOXIDE.
12532 APTIC NO. 29588

IMPINGERS

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

METHOD TO ARREST AND REMOVE WHITE SMOKE PRODUCED FROM MOLTEN ZINC PLATING PROCESS.
12135 APTIC NO. 29940

SIMPLIFIED TECHNIQUES IN AIR POLLUTION MEASUREMENT.
12289 APTIC NO. 29771

STUDIES IN INDOOR SWIMMING POOLS WITH OZONIZATION PLANTS.
12353 APTIC NO. 29999

CONTINUOUS CHARGED CLOUD-PARTICLE SAMPLER.
12451 APTIC NO. 29712

INCINERATION

AIR POLLUTANTS GENERATED IN INTRA-FURNACE COMBUSTION.
12020 APTIC NO. 29532

CONSIDERATIONS IN THE CONSTRUCTION OF LARGE REFUSE INCINERATORS.
12026 APTIC NO. 29547

DESIGN OF NEW SILVER-RECOVERY INCINERATOR.
12008 APTIC NO. 29635

INCINERATOR DESIGNED TO ANTICIPATE PROBLEMS.
11994 APTIC NO. 29669

PHYSICAL-CHEMICAL PROBLEMS OF AIR POLLUTION.
11996 APTIC NO. 29786

RECENT TREND AND PROBLEMS OF INDUSTRIAL WASTES TREATING EQUIPMENT.
12041 APTIC NO. 29827

EXPERIMENTAL STUDY ON PLASTICS INCINERATION.
12017 APTIC NO. 29841

TREATMENT OF MUNICIPAL TRASH BY SANITATION TRUCK.
12049 APTIC NO. 29979

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

CALCULATION OF EXCESS AIR FOR COMBUSTION PROCESSES USING O2-TO-N2 RATIO.
12176 APTIC NO. 29796

COMBUSTION PLANT FOR RUBBER-COATED EQUIPMENT, TANKS AND CABLES.
12191 APTIC NO. 29834

AIR POLLUTION TEST METHODS COMPARED IN INCINERATOR EVALUATION PROGRAM.
12119 APTIC NO. 29837

FUME INCINERATION: EFFECTIVE, EFFICIENT.
12100 APTIC NO. 30077

LEAD SMELTING PLANT CONTROLS AIR EMISSIONS.
12069 APTIC NO. 30124

MERCURY IN THE AIR.
12362 APTIC NO. 29490

COMPLEX ALKALI IRON SULFATES A CONTRIBUTION TO THE THERMODYNAMICS OF FIRESDIDE HIGH-TEMPERATURE CORROSION.
12616 APTIC NO. 29783

THE ECONOMIC IMPORTANCE OF HEAT RECOVERY FROM HOUSEHOLD REFUSE INCINERATORS.
12625 APTIC NO. 29992

SOME RECENT TOPICS IN AIR POLLUTION AND HEALTH IN NEW YORK.
12668 APTIC NO. 29817

INDUSTRIAL AREAS

HEAVY METAL POLLUTION IN THE ONAHAMA INDUSTRIAL AREA. 1ST REPORT. DISTRIBUTION OF HEAVY METALS IN SOIL.
12006 APTIC NO. 29539

INVESTIGATION OF HEAVY METAL POLLUTION IN IWAKI CITY.
12007 APTIC NO. 29787

THE EMISSION AND IMMISSION CONDITIONS OF THE POWER PLANTS IN THE BOEHLENER AREA.
12045 APTIC NO. 30072

ENVIRONMENTAL POLLUTION CONTROL MEASURES IN WEST EUROPE AND PROBLEMS OF CARBIDE ELECTRIC FURNACE DUST IN JAPAN.
12073 APTIC NO. 29675

SMOKE PLUMES MONITORED DAY AND NIGHT. PRACTICAL EXPERIENCE WITH A TV-LASER PLANT IN DUISBURG.
12247 APTIC NO. 30013

PLANTS AND SOILS AS INDICATORS OF METALS IN THE AIR.
12281 APTIC NO. 30113

AIR POLLUTION.
12363 APTIC NO. 29510

A STUDY ON THE ESTIMATION OF THE REGIONAL CENTRAL VALUE OF AIR POLLUTION FROM OBSERVED VALUES.
12383 APTIC NO. 29518

TEN YEARS OF AIR POLLUTION IN HOKKAIDO.
12367 APTIC NO. 29727

SUSPENDED PARTICULATES IN OSAKA CITY.
12375 APTIC NO. 29853

REGISTRATION OF THE SULPHUR DIOXIDE CONTENT OF THE AIR IN BUDAPEST.
12394 APTIC NO. 29868

ON AIR POLLUTION IN MIZUSHIMA AREA.
12390 APTIC NO. 29895

SEASONAL VARIATION OF THE CONCENTRATION OF HEAVY METALS IN SUSPENDED DUST ON THE MAIN STREETS.
12384 APTIC NO. 30025

CONCASTER, AN AREA STUDY.
12366 APTIC NO. 30047

THE TENDENCY OF AIR POLLUTION AT NAGOYA CITY OBSERVED FROM THE WEIGHT OF FALLING DUST.
12396 APTIC NO. 30076

DISSIPATION AND PRECIPITATION OF DUST EMITTED BY A STEELWORKS.
12466 APTIC NO. 29829

THE STUDY OF THE POLLUTED AIR INFLUENCE ON CHILDREN S HEALTH IN RUHRDISTRICT.
12544 APTIC NO. 29899

ON THE STUDY OF ALLERGIC REACTIONS IN CONNECTION WITH AIR POLLUTION IN SETTLEMENTS WITH INDUSTRIAL DISCHARGES.
12528 APTIC NO. 29981

ON DAMAGE TO PLANTS BY FLUORIDES IN EXHAUST GAS FROM TILE MANUFACTURING FACTORY.
12606 APTIC NO. 29597

RELATION BETWEEN INDUSTRIALIZATION AND THE DISTRIBUTION AND GROWTH OF EPIPHYTIC LICHENS AND MOSSES IN MONTREAL.
12602 APTIC NO. 29998

CORROSION RATES OF MILD STEEL IN COASTAL, INDUSTRIAL, AND INLAND AREAS OF NORTHERN CALIFORNIA.
12620 APTIC NO. 28810

CONTINUOUS MEASUREMENT SYSTEM OF ATMOSPHERIC POLLUTION AT THE MOUTH OF THE RHINE, NEAR ROTTERDAM.
12645 APTIC NO. 28696

PRESENT SITUATION OF ADMINISTRATION CONCERNING POLLUTIONS.
12648 APTIC NO. 29598

POLLUTIONS PREVENTION PLAN FOR CHIBA AND ICHIHARA CITIES IN CHIBA PREFECTURE.
12650 APTIC NO. 29813

LONG RANGE PLANNING IN AIR RESOURCE MANAGEMENT.
12657 APTIC NO. 30056

INDUSTRIAL EMISSION SOURC

NOMOGRAPH GIVES NO OXIDATION.
11993 APTIC NO. 27535

OIL REFINERS PREPARE FOR ANIT-POLLUTION CONTROLS.
12040 APTIC NO. 29127

A NATIONAL ESTIMATE OF PUBLIC AND INDUSTRIAL HEAT REJECTION REQUIREMENTS BY DECADES THROUGH THE YEAR 2000 AD.
12018 APTIC NO. 29272

MERCURY IN THE ENVIRONMENT.
11992 APTIC NO. 29489

THE INFLUENCE OF ENVIRONMENTAL PROTECTION ON PLANNING, OPERATION AND ECONOMY OF STEAM POWER PLANTS. I. MAINTENANCE OF CLEAN AIR.
12036 APTIC NO. 29519

THE CALCULATION OF MIXED HYDROCARBON-OXYGENATED SOLVENT EVAPORATION.
12038 APTIC NO. 29526

AIR POLLUTANTS GENERATED IN INTRA-FURNACE COMBUSTION.
12020 APTIC NO. 29532

COMBUSTION OF WASTE OIL FROM COAL.
12043 APTIC NO. 29534

HEAVY METAL POLLUTION IN THE ONAHAMA INDUSTRIAL AREA. 1ST REPORT. DISTRIBUTION OF HEAVY METALS IN SOIL.
12006 APTIC NO. 29539

ABOUT THE PROBLEM OF REPRESENTATIVE SAMPLING IN THE CASE OF WET SANDBLASTING.
12033 APTIC NO. 29542

CONSIDERATIONS IN THE CONSTRUCTION OF LARGE REFUSE INCINERATORS.
12026 APTIC NO. 29547

AIR POLLUTION BY NITRIC OXIDE FROM FERTILIZER FACTORIES.
12051 APTIC NO. 29568

AIR POLLUTION BY LEAD AND ZINC IN THE AREA OF COMBINED METALLURGICA WORKS AND ITS INFLUENCE ON VEGETATION AND SOIL.
12031 APTIC NO. 29572

PROBLEMS OF PUBLIC NUISANCE CAUSED BY BAD ODORS IN HYOGO PREFECTURE.
12029 APTIC NO. 29599

AMMONIA DISPOSAL--COKE PLANTS.
12012 APTIC NO. 29627

DESIGN OF NEW SILVER-RECOVERY INCINERATOR.
12008 APTIC NO. 29635

MERCURY IN MAN.
12011 APTIC NO. 29643

QUALITATIVE ANALYSIS OF EXHAUST GAS FROM FISH MEAL PLANT.
12028 APTIC NO. 29662

INCINERATOR DESIGNED TO ANTICIPATE PROBLEMS.
11994 APTIC NO. 29669

A PROGRAM TO SAMPLE AND ANALYZE AIR POLLUTION IN THE VICINITY OF A CHEMICAL RECLAMATION PLANT.
12039 APTIC NO. 29698

MARKET DEVELOPMENT IN GAS ECONOMY.
12010 APTIC NO. 29781

PHYSICAL-CHEMICAL PROBLEMS OF AIR POLLUTION.
11996 APTIC NO. 29786

INVESTIGATION OF HEAVY METAL POLLUTION IN IWAKI CITY.
12007 APTIC NO. 29787

RECENT TREND AND PROBLEMS OF INDUSTRIAL WASTES TREATING EQUIPMENT.
12041 APTIC NO. 29827

CEMENT DUST AT GREAT BRITAIN.
12001 APTIC NO. 29832

EXPERIMENTAL STUDY ON PLASTICS INCINERATION.
12017 APTIC NO. 29841

SOME PROBLEMS ON THE OFFENSIVE ODOR IN HYOGO PREFECTURE.
12030 APTIC NO. 29842

TREATMENT OF MUNICIPAL TRASH BY SANITATION TRUCK.
12049 APTIC NO. 29979

DECONTAMINATION OF POLLUTED AIR FROM HARD PITCH PRODUCTION PLANT.
12022 APTIC NO. 30026

ONE ANSWER TO PLASTICIZER POLLUTION.
11991 APTIC NO. 30028

THE EMISSION AND IMMISSION CONDITIONS OF THE POWER PLANTS IN THE BOEHLENER AREA.
12045 APTIC NO. 30072

TWO NEW PROCESSES FOR RECOVERY OF SULPHUR OXIDES FROM SMELTER GASES.
12207 APTIC NO. 29200

PROCESS FOR THE SEPARATION OF SULFUR FROM GAS.
12052 APTIC NO. 29273

OXIDATION OF SODIUM SULFIDE AND MERCAPTIDE IN BLACK LIQUOR.
12071 APTIC NO. 29278

ON DISPOSAL OF PLASTIC WASTES (PVC) BY FLUID LAYER OF MEDIUM.
12074 APTIC NO. 29449

DUST COLLECTOR FOR ELECTRIC FURNACE MANUFACTURING FERROALLOY.
12123 APTIC NO. 29481

POLLUTION CONTROL SYSTEMS FOR ASPHALT PLANTS.
12233 APTIC NO. 29492

GULF RESIDUAL OIL HDS PROCESS.
12136 APTIC NO. 29501

EXPERIMENTS CONCERNING STOICHIOMETRIC COMBUSTION IN OIL-FIRED FURNACES OF FRENCH POWER PLANTS.
12090 APTIC NO. 29513

VENTILATION AND EXPLOSION EXPERIMENTS IN A WATER-TUBE BOILER OF A POWER PLANT.
12091 APTIC NO. 29514

HEAT EXTRACTION AIDS DEPOLLUTION OF GASES AND WATER IN CHEVROLET FOUNDRY.
12097 APTIC NO. 29523

CO BOILER OF FLUIDIZED BED TYPE CATALYTIC CRACKING PROCESS PRODUCIN NO LEAD GASOLINE.
12237 APTIC NO. 29535

MITSUBISHI-RESEARCH DISC SCRUBBER.
12080 APTIC NO. 29536

OBSERVATIONS ON THE ELIMINATION OF DUST.
12143 APTIC NO. 29554

MEASURES TAKEN BY THE REGIONAL SOCIAL SECURITY ADMINISTRATION OF LIMOGES TO REDUCE THE RISKS OF SILICOSIS.
12171 APTIC NO. 29561

STUDY OF DUSTINESS AND PURIFICATION OF AIR IN A QUARRY.
12128 APTIC NO. 29562

OUTLOOK OF ENVIRONMENTAL POLLUTION AND ITS PREVENTION TECHNOLOGY.
12124 APTIC NO. 29600

ODOR TREATMENT AND ITS COST AT RENDERING FACTORIES.
12211 APTIC NO. 29601

PREVENTION OF AIR POLLUTION ON IRON FOUNDRY.
12178 APTIC NO. 29602

MODERN SULFURIC ACID TECHNOLOGY.
12093 APTIC NO. 29607

AIR POLLUTION: CONTROLLED OPERATION OF A NSSC RECOVERY FURNACE.
12127 APTIC NO. 29621

SMELTER POLLUTION CONTROL--FACTS AND PROBLEMS.
12076 APTIC NO. 29622

LAW-MAKERS SAY: CLEAN UP OR SHUT DOWN.
12055 APTIC NO. 29628

FEASIBILITY STUDY OF NEW SULFUR OXIDE CONTROL PROCESSES FOR APPLICATION TO SMELTERS AND POWER PLANTS. PART IV: THE WELLMAN-LORD SO2 RECOVERY PROCESS FOR APPLICATION TO POWER PLANT FLUE GASES. (FINAL REPORT).
12208 APTIC NO. 29641

COUNTERMEASURES ON PREVENTION OF INDUSTRIAL POLLUTIONS--PART II ON SULFURIC ACID GAS.
12210 APTIC NO. 29646

POLLUTION TECHNOLOGY--WHAT THEY RE DOING OVERSEAS.
12244 APTIC NO. 29650

NEW WAYS TO MORE POWER WITH LESS POLLUTION.
12166 APTIC NO. 29658

POLLUTION REGULATIONS AND THEIR EFFECT ON VEHICLE PREPARATION.
12112 APTIC NO. 29659

ENVIRONMENTAL POLLUTION CONTROL MEASURES IN WEST EUROPE AND PROBLEMS OF CARBIDE ELECTRIC FURNACE DUST IN JAPAN.
12073 APTIC NO. 29675

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

ELECTROSTATIC PRECIPITATORS FOR CEMENT AND LIME INDUSTRY.
12169 APTIC NO. 29735

DEVELOPMENT OF GAS PURIFICATION INSTALLATIONS FOR ELECTRIC MELTING FURNACES.
12204 APTIC NO. 29740

PROBLEM OF OBNOXIOUS ODOR IN INDUSTRIAL POLLUTIONS.
12202 APTIC NO. 29745

ON PUBLIC NUISANCE BY, AND ENVIRONMENTAL HYGIENE OF, PAINT MANUFACTURING INDUSTRY.
12059 APTIC NO. 29761

BAGHOUSE OPERATION AT THE WHITING, INDIANA PLANT OF THE FEDERATED METALS DIVISION AMERICAN SMELTING AND REFINING COMPANY.
12167 APTIC NO. 29772

CALCULATION OF EXCESS AIR FOR COMBUSTION PROCESSES USING O2-TO-N2 RATIO.
12176 APTIC NO. 29796

REMOVAL OF CHLORINE FROM GASES.
12177 APTIC NO. 29802

POLLUTION CONTROL AT THE SAGAMIHARA PLANT OF OUR TOKYO MACHINERY WORKS.
12199 APTIC NO. 29821

PROGRESS IN DEDUSTING TECHNIQUE IN CEMENT WORKS.
12125 APTIC NO. 29830

DUST COLLECTING SYSTEMS IN CEMENT WORKS.
12106 APTIC NO. 29831

ACID MIST PRECIPITATOR MADE OF TEFLON FIBER.
12061 APTIC NO. 29833

COMBUSTION PLANT FOR RUBBER-COATED EQUIPMENT, TANKS AND CABLES.
12191 APTIC NO. 29834

AIR POLLUTION TEST METHODS COMPARED IN INCINERATOR EVALUATION PROGRAM.
12119 APTIC NO. 29837

ALKALI AND HEAT RECOVERY IN THE FLUE GASES FROM RECOVERY BOILERS.
12193 APTIC NO. 29852

NEW PROCESS OFFERS 99.9% SULPHUR RECOVERY.
12062 APTIC NO. 29855

THE NEW DUPLEX IRON MELTING PLANT AT THE M. BUSCH KG IN WEHRSTAPEL.
12094 APTIC NO. 29861

CONTROL OF ATMOSPHERIC EMISSIONS FROM PETROLEUM STORAGE TANKS.
12063 APTIC NO. 29889

SELECTION OF FILTRATION EQUIPMENT FOR SULPHUR AND POTASH PROCESSING.
12160 APTIC NO. 29902

METHOD TO ARREST AND REMOVE WHITE SMOKE PRODUCED FROM MOLTEN ZINC PLATING PROCESS.
12135 APTIC NO. 29940

REMOVAL OF BROWN FUME FROM WASTE GASES OF OPEN HEARTH FURNACE OXYGEN STEELMAKING PROCESS.
12194 APTIC NO. 29945

DESULFURIZATION OF WASTE GASES AND FUELS.
12205 APTIC NO. 29957

HIGH-CONCENTRATION SULFUR DIOXIDE FROM CALCINING PYRITES IN THE DKSM FURNACE.
12157 APTIC NO. 29982

METHOD FOR MANUFACTURING SPHERICAL ACTIVE CARBON FROM COAL.
12141 APTIC NO. 29988

THE PROBLEM OF INDUSTRIAL DUST: WAYS TO REGULATE ITS COLLECTION.
12099 APTIC NO. 29990

AIR FILTRATION SYSTEM FOR ELECTRIC FURNACE SWITCH GEAR AT LUKENS STEEL.
12065 APTIC NO. 30018

ELIMINATION OF OXIDES CONTAINED IN CERTAIN RESIDUAL INDUSTRIAL GASES.
12129 APTIC NO. 30043

KINETICS OF RECOVERING SULFUR FROM THE SPENT SEED IN AN MHD POWER PLANT.
12118 APTIC NO. 30048

JOINT DEMONSTRATION OF METHODS FOR EXTINGUISHMENT AND CONTROL OF BURNING COAL REFUSE PILES. (FINAL REPORT).
12066 APTIC NO. 30057

PULPERS APPLY ODOR CONTROL.
12104 APTIC NO. 30062

FUME INCINERATION: EFFECTIVE, EFFICIENT.
12100 APTIC NO. 30077

SULFURIC ACID, SO2 DEVELOPMENTS: REMOVING SO2 AND ACID MIST WITH VENTURI SCRUBBERS.
12209 APTIC NO. 30080

ON A DUST-COLLECTING DEVICE FOR A FERROSILICON FURNACE.
12219 APTIC NO. 30086

THE SCRUBBING OF TAIL GAS FROM SULFURIC ACID PLANTS.
12067 APTIC NO. 30096

SUMMARY OF H2SO4 MANUFACTURE.
12068 APTIC NO. 30099

REDUCING SO2 EMISSION FROM STATIONARY SOURCES.
12098 APTIC NO. 30102

AIR POLLUTION DERIVING FROM HEATING PLANTS AND INDUSTRIAL PROCESSES AND ITS CONTROL.
12229 APTIC NO. 30106

LOSS OF MERCURY FROM CHLORALKALI PLANTS.
12120 APTIC NO. 30117

TFE-FLUOROCARBON FIBER FILTER BAGS--IT COSTS MORE TO GO FIRST CLASS.
12109 APTIC NO. 30121

LEAD SMELTING PLANT CONTROLS AIR EMISSIONS.
12069 APTIC NO. 30124

EXPERIMENTAL INVESTIGATION OF THE PROCESS OF CENTRIFUGAL DUST SEPARATION.
12245 APTIC NO. 30133

REPORT FOR THE INVESTIGATION ON THE METHOD OF SO2 TEST.
12301 APTIC NO. 29381

APPARATUS FOR TEST PREPARATION IN VERY HUMID ATMOSPHERES AND IN PARTICULAR AT DRILLING OPERATIONS.
12253 APTIC NO. 29541

A PHOTOGRAPHIC METHOD OF DETERMINING THE EMISSION OF DUST GENERATED BY INDUSTRIAL MACHINERY.
12254 APTIC NO. 29544

COMPARISON OF VARIOUS METHODS OF DETERMINING QUARTZ CONTENT IN NOXIOUS DUST.
12263 APTIC NO. 29546

OBSERVATIONS CONCERNING THE USE OF THE A.R.M. APPARATUS AND THE POSSIBILITIES OF UTILIZING THE RESULTS FOR PREVENTIVE MEASURES.
12291 APTIC NO. 29536

THE PROBLEM OF REPRESENTATIVE SAMPLING. CONDITIONS FOR CORRECT USE OF AN APPARATUS FOR SAMPLING.
12252 APTIC NO. 29557

DETERMINATION OF A DOCTRINE FOR VALID SAMPLING.
12273 APTIC NO. 29560

ANALYZERS FOR MONITORING AIR QUALITY IN POLLUTION.
12272 APTIC NO. 29634

JIS ANALYTICAL PROCESS FOR NITROGEN OXIDES IN WASTE GAS.
12355 APTIC NO. 29677

ON MEASUREMENT OF ODOR.
12256 APTIC NO. 29726

MEASUREMENT OF GASEOUS AND PARTICULATE FLUORINE EMISSIONS.
12322 APTIC NO. 29738

PRODUCTION OF GASES OF KNOWN SPECIFIC ACTIVITY IN A REACTOR FOR CALIBRATING GASEOUS EFFLUENT MONITORS.
12264 APTIC NO. 29848

DETERMINATION OF AROMATIC HYDROCARBONS EMITTED FROM THE DRY BATTERY PLANT.
12287 APTIC NO. 29862

AUTOMATED ANALYSIS SYSTEMS MAKES KRAFT EMISSION MEASUREMENTS EASY.
12325 APTIC NO. 29913

PARALLEL DETERMINATION OF NICKEL AND COBALT IN URINE AND ATMOSPHERE.
12300 APTIC NO. 29953

DETECTION OF THE TOTAL AMOUNT OF ORGANIC SUBSTANCES IN THE DISCHARGED AIR FROM THE PRODUCTION OF SYNTHETIC FATTY ACIDS.
12334 APTIC NO. 29983

SPECIAL COLUMN CONFIGURATION FOR THE ANALYSIS OF SOME INORGANIC GASES AND LIGHT HYDROCARBONS.
12315 APTIC NO. 30029

ATMOSPHERIC POLLUTION. APPARATUS FOR MEASURING THE CONCENTRATION OF CONDENSATION NUCLEI IN THE ATMOSPHERE.
12267 APTIC NO. 30041

ATMOSPHERIC POLLUTION AT MODERN COKE WORKS.
12380 APTIC NO. 29257

MERCURY IN THE AIR.
12362 APTIC NO. 29490

INTERPRETATION OF RESULTS OF EXAMINATION OF AIR.
12386 APTIC NO. 29545

TESTS OF REPRESENTATIVE SPECIMENS OF CRYSTALLINE SILICA CONTAINED IN THE ATMOSPHERE OF INDUSTRIAL PLANTS.
12370 APTIC NO. 29553

BENZPYRENE AND OTHER AROMATIC HYDROCARBONS IN THE DUST OF POLISH TOWNS.
12385 APTIC NO. 29569

THE 3,4-BENZPYRENE CONTENT OF THE AIR IN TWO INDUSTRIAL AREAS.
12400 APTIC NO. 29586

A STUDY OF AIR POLLUTION AROUND A SULPHURIC ACID PLANT.
12374 APTIC NO. 29883

POLLUTIONS AND TOKYO METROPOLITAN GOVERNMENT.
12365 APTIC NO. 29973

REPLY.
12411 APTIC NO. 29470

NEW EYE ON THE AIR.
12412 APTIC NO. 29644

SCAVENGING OF AEROSOL PARTICLES BY SPRAYS.
12437 APTIC NO. 29711

NO-X CONTROL FROM STATIONARY SOURCES.
12427 APTIC NO. 29764

DISSIPATION AND PRECIPITATION OF DUST EMITTED BY A STEELWORKS.
12466 APTIC NO. 29829

DISSIPATION OF SO2 GENERATED IN A STEELWORK INTO THE GROUND LAYER OF THE ATMOSPHERE.
12467 APTIC NO. 29867

A METHOD FOR OPTIMIZING POLLUTANT EMISSIONS IN AN AIRSHED.
12448 APTIC NO. 29903

TOWARD A RATIONAL POWER POLICY: RECONCILING NEEDS FOR ENERGY AND ENVIRONMENTAL PROTECTION.
12403 APTIC NO. 29986

PROGRESS REPORT. JANUARY-DECEMBER 1969.
12555 APTIC NO. 28850

PULMONARY COMPLICATIONS OF ASBESTOS EXPOSURE.
12552 APTIC NO. 29221

A CONTRIBUTION TO THE EVALUATION OF THE RISK OF SILICOSIS.
12549 APTIC NO. 29558

TWO OBSERVATIONS IN A FLUORSPAR QUARRY.
12535 APTIC NO. 29565

ON HYGIENIC AND TOXICOLOGICAL PROBLEMS OF POLLUTION BY ARSENIC.
12534 APTIC NO. 29587

ITAI-ITAI (OUCH-OUCH) DISEASE AND CADMIUM POLLUTION IN JAPAN.
12581 APTIC NO. 29673

BIOLOGICAL MONITORING GUIDES. FLUORIDES.
12525 APTIC NO. 29807

PROCEEDINGS OF THE 9TH CONFERENCE OF JAPAN ASSOCIATION OF INDUSTRIAL HEALTH.
12526 APTIC NO. 29963

EFFECT OF AIR AND WATER POLLUTION ON AGRICULTURAL PRODUCTS BY CD, PB, ZN ATTRIBUTED TO MINE REFINERY IN ANNAKA CITY, GUNMA PREFECTURE.
12601 APTIC NO. 27489

ON DAMAGE TO PLANTS BY FLUORIDES IN EXHAUST GAS FROM TILE MANUFACTURING FACTORY.
12606 APTIC NO. 29597

COMPLEX ALKALI IRON SULFATES A CONTRIBUTION TO THE THERMODYNAMICS OF FIRESDIDE HIGH-TEMPERATURE CORROSION.
12616 APTIC NO. 29783

ALUMINUM MATERIAL FOR THE CHEMICAL INDUSTRY.
12624 APTIC NO. 29922

AN SO2 REMOVAL AND RECOVERY PROCESS.
12630 APTIC NO. 29144

HOW EMISSION CONTROL AFFECTS MELTING COSTS.
12628 APTIC NO. 29879

THE COSTS FOR MAINTENANCE OF CLEAN AIR. THE INFLUENCE OF SOCIAL COSTS ON THE SELECTION OF AN INDUSTRIAL SITE.
12633 APTIC NO. 29923

THE ECONOMIC IMPORTANCE OF HEAT RECOVERY FROM HOUSEHOLD REFUSE INCINERATORS.
12625 APTIC NO. 29992

HOW THE LAWS AND AGENCIES AFFECT YOU.
12641 APTIC NO. 29113

COMPARATIVE STUDY OF PERMISSIBLE LIMITS OF AIR DUSTINESS IN VARIOUS COUNTRIES.
12639 APTIC NO. 29543

INDUSTRIAL REACTION TO SULPHUR DIOXIDE CONTROL EQUIPMENT AND STANDARDS.
12637 APTIC NO. 29604

INDUSTRIAL EMISSIONS: AN ANALYSIS OF SOME KEY FACTORS.
12669 APTIC NO. 29469

THE PREVENTION OF POLLUTION. PART II-POLLUTION AND THE LAW.
12658 APTIC NO. 29474

EXPANSION AND STRENGTHENING OF AIR POLLUTION CONTROL COUNTERMEASURES.
12671 APTIC NO. 29495

COLLECTION OF LEGISLATIONS RELATED WITH MITI CONCERNING POLLUTIONS.
12646 APTIC NO. 29504

ON THE BASIC LAW FOR ENVIRONMENTAL POLLUTION CONTROL, NOISE CONTROL LAW, WATER POLLUTION PREVENTION LAW, AND AIR POLLUTION PREVENTION LAW.
12670 APTIC NO. 29509

ADDENDUM TO ENVIRONMENTAL POLLUTIONS IN KAWASAKI CITY.
12647 APTIC NO. 29511

COMMISSION FOR INDUSTRIAL DUST PROBLEMS IN GERMANY.
12520 APTIC NO. 29555

PRESENT SITUATION OF ADMINISTRATION CONCERNING POLLUTIONS.
12648 APTIC NO. 29598

CHIBA PREFECTURAL ORDINANCE ON POLLUTIONS CONTROL AND ENFORCEMENT REGULATION OF ORDINANCE.
12649 APTIC NO. 29679

POLLUTIONS PREVENTION PLAN FOR CHIBA AND ICHIHARA CITIES IN CHIBA PREFECTURE.
12650 APTIC NO. 29813

SOME RECENT TOPICS IN AIR POLLUTION AND HEALTH IN NEW YORK.
12668 APTIC NO. 29817

CASTING WORK ENVIRONMENTS AND PUBLIC NUISANCE.
12655 APTIC NO. 29975

LONG RANGE PLANNING IN AIR RESOURCE MANAGEMENT.
12657 APTIC NO. 30056

OUR ENVIRONMENT--OPTIONS ON THE WAY INTO THE FUTURE.
12675 APTIC NO. 29722

CHANGE IN POLLUTANTS AND FUTURE PROBLEMS.
12680 APTIC NO. 29743

INERTIAL SEPARATION

PARTICLE CAPTURE MECHANISMS IN FIBROUS FILTERS.
12214 APTIC NO. 29324

FILTRATION OF MULTI-DISPERSING AEROSOL UNDER THE FORCE OF GRAVITY.
12115 APTIC NO. 29730

THE PROBLEM OF INDUSTRIAL DUST: WAYS TO REGULATE ITS COLLECTION.
12099 APTIC NO. 29990

INFECTIOUS DISEASES

STUDIES OF THE SIGNIFICANCE OF DUSTS AND GASES FOR THE PATHOLOGY OF INFECTIONS OF THE RESPIRATORY TRACT.
12529 APTIC NO. 29571

INFLUENZA

AIRBORNE INFLUENZA PR8-A VIRUS INFECTIONS IN ACTIVELY IMMUNIZED MICE.
12167 APTIC NO. 29718

INFRARED RADIATION

ON THE MEASUREMENT AND ABSOLUTE CALIBRATION OF THE STRENGTH OF SOLAR RADIATION ENERGY.
12348 APTIC NO. 29863

OXIDATION STUDY ON ATMOSPHERIC AGING OF POLYMERS.
12622 APTIC NO. 29826

INFRARED SPECTROMETRY

THE EXHAUST GAS COMPOSITION AT THE FM GASOLINE ENGINE.
12046 APTIC NO. 29516

QUALITATIVE ANALYSIS OF EXHAUST GAS FROM FISH MEAL PLANT.
12028 APTIC NO. 29662

INFRARED SPECTROSCOPIC STUDY OF THE CATALYTIC OXIDATION OF CARBON MONOXIDE TO CARBON DIOXIDE ON MANGANESE DIOXIDE.
12105 APTIC NO. 30091

INFRARED FOURIER TRANSFORM SPECTROSCOPY IN FLAVOR ANALYSIS III.
12312 APTIC NO. 29056

INFRARED RADIATION PROPERTIES OF SULFUR DIOXIDE.
12269 APTIC NO. 29521

JIS ANALYTICAL PROCESS FOR NITROGEN OXIDES IN WASTE GAS.
12355 APTIC NO. 29677

STUDY OF TRACES OF HEAVY ORGANIC PRODUCTS IN FUEL COMBUSTION GASES. (Etude des traces de produits organiques lourds dans les fumees de combustion de fuel). Text in French. Rev. Gen. Thermique (Paris), 10(111):223-238, March 1971. 90 refs.
12310 APTIC NO. 29766

ENVIRONMENTAL POLLUTION AND ITS MEASUREMENTS (II).
12338 APTIC NO. 29843

EMISSION MONITORING WITH ACKNOWLEDGED MEASURING UNITS AND ANALYZERS.
12260 APTIC NO. 29955

CALCULATION METHODS OF SPECTRAL ABSORPTION OF INFRARED RADIATION BY ATMOSPHERIC GASES.
12323 APTIC NO. 30103

INDOOR/OUTDOOR AIR QUALITY RELATIONSHIPS.
12398 APTIC NO. 30090

EFFECTS OF ATMOSPHERIC CONDITIONS ON AUTOMOBILE EXHAUST GAS COMPOSITIONS.
12461 APTIC NO. 29893

STUDIES ON PHOTOCHEMICAL REACTION BETWEEN SULFURIC ACID GAS AND ORGANIC COMPOUNDS (2).
12512 APTIC NO. 29463

THE REACTION OF OZONE WITH SOLID POLYSTYRENE.
12505 APTIC NO. 29666

DAMAGE TO PLANTS BY AIR POLLUTANTS.
12603 APTIC NO. 29746

THE MECHANISM OF ATMOSPHERIC RUSTING AND THE EFFECT OF CU AND P ON THE RUST FORMATION OF LOW ALLOY STEELS.
12615 APTIC NO. 29631

INGESTION

MERCURY IN THE ENVIRONMENT.
11992 APTIC NO. 29489

PROGRESS REPORT. JANUARY-DECEMBER 1969.
12555 APTIC NO. 28850

ON HYGIENIC AND TOXICOLOGICAL PROBLEMS OF POLLUTION BY ARSENIC.
12534 APTIC NO. 29587

LEAD MEN HEADING TOWARD DESTRUCTION--SPREADING OMINOUS METAL POLLUTIONS.
12569 APTIC NO. 29789

PROBLEMS OF FLUORINE EMISSION MEASUREMENTS.
12608 APTIC NO. 29736

INHALATION THERAPY

THE ROLE OF AIR POLLUTION ON CHRONIC OBSTRUCTIVE PULMONARY DISEASE.
12539 APTIC NO. 30136

CAN ANYTHING BE DONE FOR EMPHYSEMA? J. Louisiana State Med. Soc., 122(7):216-218, July 1970. 18 refs.
12579 APTIC NO. 30137

THE ROLE OF TRACE METALS IN CHEMICAL CARCINOGENESIS: ASBESTOS CANCERS.
12543 APTIC NO. 29993

INORGANIC ACIDS

NOMOGRAPH GIVES NO OXIDATION.
11993 APTIC NO. 27535

AIR POLLUTANTS GENERATED IN INTRA-FURNACE COMBUSTION.
12020 APTIC NO. 29532

NITROGEN OXIDES ANALYSIS.
12042 APTIC NO. 29538

PHYSICAL-CHEMICAL PROBLEMS OF AIR POLLUTION.
11996 APTIC NO. 29786

CAUSES, MEASUREMENT AND LIMITATION OF PARTICULATE EMISSION FROM OIL-FIRED STEAM BOILERS.
12000 APTIC NO. 30021

TWO NEW PROCESSES FOR RECOVERY OF SULPHUR OXIDES FROM SMELTER GASES.
12207 APTIC NO. 29200

MODERN SULFURIC ACID TECHNOLOGY.
12093 APTIC NO. 29607

SMELTER POLLUTION CONTROL--FACTS AND PROBLEMS.
12076 APTIC NO. 29622

FEASIBILITY STUDY OF NEW SULFUR OXIDE CONTROL PROCESSES FOR APPLICATION TO SMELTERS AND POWER PLANTS. PART IV: THE WELLMAN-LORD SO2 RECOVERY PROCESS FOR APPLICATION TO POWER PLANT FLUE GASES. (FINAL REPORT).
12208 APTIC NO. 29641

NEW METHOD OF MANUFACTURING CATALYST FOR EXHAUST GAS.
12133 APTIC NO. 29733

ADSORPTIVITY OF DESULFURIZING ACTIVATED CARBON FOR SULFUROUS ACID GAS (II) - EFFECT OF THE ADSORPTION - RINSING PROCESS ON THE ADSORPTIVITY.
12238 APTIC NO. 29788

REMOVAL OF CHLORINE FROM GASES.
12177 APTIC NO. 29802

ACID MIST PRECIPITATOR MADE OF TEFLON FIBER.
12061 APTIC NO. 29833

ELIMINATION OF OXIDES CONTAINED IN CERTAIN RESIDUAL INDUSTRIAL GASES.
12129 APTIC NO. 30043

CONTROL OF POLLUTANT EMISSION AND SULPHURIC ACID CORROSION FROM COMBUSTION OF RESIDUAL FUEL OIL. PART I: LOW-PRESSURE HEATING BOILERS WITH MECHANICAL ATOMIZING BURNERS.
12164 APTIC NO. 30055

SULFURIC ACID, SO2 DEVELOPMENTS: REMOVING SO2 AND ACID MIST WITH VENTURI SCRUBBERS.
12209 APTIC NO. 30080

THE SCRUBBING OF TAIL GAS FROM SULFURIC ACID PLANTS.
12067 APTIC NO. 30096

SUMMARY OF H2SO4 MANUFACTURE.
12068 APTIC NO. 30099

REDUCING SO2 EMISSION FROM STATIONARY SOURCES.
12098 APTIC NO. 30102

REPORT FOR THE INVESTIGATION ON THE METHOD OF SO2 TEST.
12301 APTIC NO. 29381

ON THE EFFECT OF ACCOMPANYING GASES IN QUANTITATIVE ANALYSIS OF HYDROGEN SULFIDE USING METHYLENE BLUE.
12343 APTIC NO. 29505

COMPARISON OF VARIOUS METHODS OF DETERMINING QUARTZ CONTENT IN NOXIOUS DUST.
12263 APTIC NO. 29546

RESULTS OF COMPARATIVE TESTS ON QUARTZ CONTENT OBTAINED FROM LABORATORIES USING VARIOUS TECHNIQUES OF DETERMINATION.
12327 APTIC NO. 29552

A GAS ANALYSER FOR THE MEASUREMENT OF IMPURITIES IN AIR.
12277 APTIC NO. 29581

OXIDATION OF NITROGEN MONOXIDE.
12320 APTIC NO. 29676

EXPERIENCES WITH FLUORINE EMISSION MEASUREMENTS.
12290 APTIC NO. 29737

MEASUREMENT OF GASEOUS AND PARTICULATE FLUORINE EMISSIONS.
12322 APTIC NO. 29738

TESTS WITH A SAMPLING AND MEASUREMENT METHOD FOR ROUTINE DETERMINATION OF FLUORINE IN THE LOWER ATMOSPHERE.
12262 APTIC NO. 29887

AUTOMATIC MEASURING APPARATUS OF FLUORIDE GASSES IN AIR.
12299 APTIC NO. 29966

FRACTIONATION OF OXYGEN ISOTOPES BETWEEN NO AND H20.
12297 APTIC NO. 30114

A STUDY OF AIR POLLUTION AROUND A SULPHURIC ACID PLANT.
12374 APTIC NO. 29883

POLLUTIONS AND TOKYO METROPOLITAN GOVERNMENT.
12365 APTIC NO. 29973

ATMOSPHERIC REACTIONS AND SCAVENGING PROCESSES.
12426 APTIC NO. 29774

FORMATION OF PARTICLES BY PHOTOLYSIS AND RADIOLYSIS.
12407 APTIC NO. 29809

STUDIES ON PHOTOCHEMICAL REACTION BETWEEN SULFURIC ACID GAS AND ORGANIC COMPOUNDS (2).
12512 APTIC NO. 29463

METHOD OF CALCULATING EQUILIBRIUM COMPOSITIONS IN INTERACTION OF NITROGEN OXIDES WITH NITRIC ACID SOLUTIONS.
12470 APTIC NO. 29800

THE ABSORPTION COEFFICIENT OF A GASEOUS SUBSTANCE ON A SWARMING FILM.
12479 APTIC NO. 29994

AIR POLLUTION.
12575 APTIC NO. 29949

PROBLEMS OF FLUORINE EMISSION MEASUREMENTS.
12608 APTIC NO. 29736

DAMAGE TO PLANTS BY AIR POLLUTANTS.
12603 APTIC NO. 29746

COMPLEX ALKALI IRON SULFATES A CONTRIBUTION TO THE THERMODYNAMICS OF FIRESDIDE HIGH-TEMPERATURE CORROSION.
12616 APTIC NO. 29783

PROBLEMS IN INDUSTRIAL POWER PLANTS.
12618 APTIC NO. 29956

AN SO2 REMOVAL AND RECOVERY PROCESS.
12630 APTIC NO. 29144

COLLECTION OF LEGISLATIONS RELATED WITH MITI CONCERNING POLLUTIONS.
12646 APTIC NO. 29504

MATERIALS FOR REFERENCE ABOUT ENVIRONMENTAL POLLUTION CONTROL.
12651 APTIC NO. 29818

INSPECTION

CLOSE SCRUTINY OF AUTOMOBILE EXHAUST GASES. TECHNICAL INSPECTION SERVICE FOR AUTOMOBILES IN NEW PREMISES.
12005 APTIC NO. 30002

DUST COLLECTING SYSTEMS IN CEMENT WORKS.
12106 APTIC NO. 29831

CHIBA PREFECTURAL ORDINANCE ON POLLUTIONS CONTROL AND ENFORCEMENT REGULATION OF ORDINANCE.
12649 APTIC NO. 29679

COMPARATIVE STUDY OF CERTAIN PROVISIONS IN MEMBER STATES FOR CONTROLLING AIR POLLUTION.
12656 APTIC NO. 30052

INSTRUMENTATION

FOSSIL FUELS AS A SOURCE OF MERCURY POLLUTION.
12019 APTIC NO. 30017

DEVELOPMENT OF A NEW DUST COLLECTOR.
12056 APTIC NO. 29686

BAGHOUSE OPERATION AT THE WHITING, INDIANA PLANT OF THE FEDERATED METALS DIVISION AMERICAN SMELTING AND REFINING COMPANY.
12107 APTIC NO. 29772

APPARATUS FOR TEST PREPARATION IN VERY HUMID ATMOSPHERES AND IN PARTICULAR AT DRILLING OPERATIONS.
12253 APTIC NO. 29541

INSTRUMENTS AND THEIR APPLICATIONS IN MASS SPECTROMETRY.
12261 APTIC NO. 29579

ANALYZERS FOR MONITORING AIR QUALITY IN POLLUTION.
12272 APTIC NO. 29634

ON MEASUREMENT OF ODOR.
12256 APTIC NO. 29726

ENVIRONMENTAL POLLUTION AND ITS MEASUREMENTS (II).
12338 APTIC NO. 29843

PIEZOLECTRIC-ELECTROSTATIC AEROSOL MASS CONCENTRATION MONITOR.
12331 APTIC NO. 30061

A SUGGESTED OUTLINE FOR PROVIDING INFORMATION ON FACILITIES EXISTING IN COUNTRIES AT PILOT STATION.
12360 APTIC NO. 29055

THERMAL-DIFFUSION CHAMBERS AS CLOUD-NUCLEI COUNTERS.
12452 APTIC NO. 29714

AUTOMATIC SEQUENTIAL RAIN SAMPLER FOR SCAVENGING STUDIES.
12423 APTIC NO. 29741

DISSOCIATIVE ELECTRON ATTACHMENT PROCESSES IN SO2 AND NO2.
12444 APTIC NO. 30008

GENERATION AND MEASUREMNT OF AIR IONS FOR MEDICAL APPLICATIONS AND THER INFLUENCE ON REACTION TIME AND MONOSYNAPTIC REFLEX OF MAN.
12547 APTIC NO. 29267

INTERMITTENT MONITORING

A COMPREHENSIVE SAMPLING SYSTEM FOR STUDYING THE RELATION BETWEEN VISIBILITY, METEOROLOGICAL PARAMETERS AND ATMOSPHERIC POLLUTION.
12276 APTIC NO. 30082

INTERNAL COMBUSTION ENGIN

COMBUSTION REGULARITY A KEY TO SPARK-IGNITION ENGINE EMISSIONS REDUCTION? Preprint, Academia R. P. R., Bucharest, 15p., 1970. 4 refs. (Presented at the Internal Combustion Engines Conference, 2nd International, Bucharest (Rumania), 1970.)
12023 APTIC NO. 27641

THE EXHAUST GAS COMPOSITION AT THE FM GASOLINE ENGINE.
12046 APTIC NO. 29516

NITROGEN OXIDES ANALYSIS.
12042 APTIC NO. 29538

WHY LEAD IN GASOLINE? THE EFFECT OF LEAD CONTAINING ANTIKNOCK AGENTS FOR OTTO ENGINE FUELS.
11995 APTIC NO. 29782

PHYSICAL CHEMICAL PROBLEMS OF AIR POLLUTION.
11996 APTIC NO. 29786

COUNTERMEASURES ON AUTOMOBILE EXHAUST GAS.
12050 APTIC NO. 29935

PRACTICAL ANALYTICAL METHOD OF EXHAUST REFLUX EFFECT ON NOX EMISSION CONTROL.
12102 APTIC NO. 29499

AN EXPERIMENTAL STUDY ON THE PERFORMANCE OF A MULTIFUEL ENGINE. PART 3. AN ATTEMPT OF M-COMBUSTION APPLIED TO A SWIRL CHAMBER.
12183 APTIC NO. 29520

EMISSIONS FROM INTERNAL COMBUSTION ENGINE.
12225 APTIC NO. 29531

EXHAUST GAS CLEANER FOR DIESEL ENGINES.
12221 APTIC NO. 29533

THE AUTOMOBILE AND AIR POLLUTION.
12186 APTIC NO. 29633

AN EXPERIMENT ON VALVE RECESSION BY NON-LEADED GASOLINE.
12222 APTIC NO. 29656

EFFECTS OF THE ADDITION OF BARIUM COMPOUND ON THE SMOKE CONCENTRATION OF DIESEL EXHAUST GAS.
12057 APTIC NO. 29696

NEW METHOD OF MANUFACTURING CATALYST FOR EXHAUST GAS.
12133 APTIC NO. 29733

INTERNAL COMBUSTION ENGINE EXHAUST SYSTEM.
12132 APTIC NO. 29836

EXHAUST GAS PURIFIER.
12179 APTIC NO. 29905

STUDY ON AUTO EXHAUST.
12241 APTIC NO. 29909

EFFECTS OF WATER INJECTION IN INLET TUBE ON NO CONCENTRATION IN DIESEL EXHAUST.
12220 APTIC NO. 29911

MUFFLER FOR REMOVING PARTICULATE LEAD FROM EXHAUST GASES OF INTERNAL COMBUSTION ENGINES.
12168 APTIC NO. 29920

CAN ADDITIVES DECREASE DIESEL SMOKE? Power, 114(8):60, Aug. 1970.
12023 APTIC NO. 27641

WASTE GAS RECIRCULATION IN COMBUSTION ENGINES, PRIMARILY DIESEL ENGINES.
12181 APTIC NO. 29962

FIRST RESULTS WITH THE M.A.N.-EXPERIMENTAL GAS TURBINE FOR COMMERCIAL VEHICLES.
12131 APTIC NO. 30088

EXHAUST GAS EVALUATION BY AIR RATIO COEFFICIENTS.
12278 APTIC NO. 29638

GAS CHROMATOGRAPHIC ANALYSIS OF BENZENE AND TOLUENE IN AUTOMOBILE EXHAUST GAS.
12295 APTIC NO. 29907

QUANTITATIVE ALDEHYDE DETERMINATION IN THE AIR OF WORKING PLACES.
12317 APTIC NO. 30023

INTERNATIONAL

TODAY'S BASE OF EUROPEAN MINERAL OIL SUPPLY.
12004 APTIC NO. 28337

ENVIRONMENTAL POLLUTION CONTROL MEASURES IN WEST EUROPE AND PROBLEMS OF CARBIDE ELECTRIC FURNACE DUST IN JAPAN.
12073 APTIC NO. 29675

DETERMINATION OF IRON, CHROMIUM, COBALT, NICKEL, AND SCANDIUM IN ASBESTOS BY NEUTRON ACTIVATION ANALYSIS.
12292 APTIC NO. 30129

RESEARCH FACILITIES NECESSARY TO ADEQUATELY SUPPORT MEASUREMENT OF LOW LEVELS OF POLLUTANTS AND FOLLOW THEIR TRENDS.
12359 APTIC NO. 29050

A SUGGESTED OUTLINE FOR PROVIDING INFORMATION ON FACILITIES EXISTING IN COUNTRIES AT PILOT STATION.
12360 APTIC NO. 29055

PROBLEMS OF AIR POLLUTION AND MEASURES TO COMBAT IT IN EL PASO, TEXAS.
12368 APTIC NO. 30094

IT BEGAN WITH THE SMOG IN CALIFORNIA. CALIFORNIA TEST, EUROPEAN TEST--INTERNATIONAL REGULATIONS OF AUTOMOBILE EXHAUST GAS EMISSIONS.
12640 APTIC NO. 30069

NEW TREND IN POLLUTIONS COUNTERMEASURES IN THE 70 S.
12660 APTIC NO. 29507

LEGAL ASPECTS OF AIR POLLUTION IN BELGIUM AND OTHER NEIGHBORING COUNTRIES.
12659 APTIC NO. 30040

COMPARATIVE STUDY OF CERTAIN PROVISIONS IN MEMBER STATES FOR CONTROLLING AIR POLLUTION.
12656 APTIC NO. 30052

INTERNATIONAL SYMPOSIUM ON THE HYGIENE OF THE AIR OF THE MEMBER COUNTRIES OF THE COUNCIL FOR MUTUAL ECONOMIC AID.
12679 APTIC NO. 29593

INVERSION

DEVELOPMENT OF A METEOROLOGICALLY CONTROLLED AGRICULTURAL BURNING PROGRAM.
12058 APTIC NO. 29724

DISTRIBUTION OF POLLUTION AT SOME COUNTRY SITES.
12425 APTIC NO. 29582

EPISODE 104.
12410 APTIC NO. 29695

EFFECT OF THE TEMPERATURE DEPENDENCE OF OZONE ABSORPTION ON VERTICAL OZONE DISTRIBUTIONS DEDUCED FROM UMKEHR OBSERVATIONS.
12415 APTIC NO. 29875

A NUMERICAL EXPERIMENT IN SIMULATING THE TRANSPORT OF SULFUR DIOXIDE THROUGH THE ATMOSPHERE.
12446 APTIC NO. 29952

DISCUSSIONS DEPTH OF THE BOUNDARY LAYER.
ERROR

PATIENT ADVICE DURING ACUTE AIR POLLUTION EPISODE.
12531 APTIC NO. 29678

UNLEADED GASOLINE AND SMOG-FREE AUTOS--HOW AND WHY.
12644 APTIC NO. 30035

IODIDES

PHYSICAL-CHEMICAL PROBLEMS OF AIR POLLUTION.
11996 APTIC NO. 29786

STUDIES IN INDOOR SWIMMING POOLS WITH OZONIZATION PLANTS.
12353 APTIC NO. 29999

SCAVENGING OF AEROSOL PARTICLES BY SPRAYS.
12437 APTIC NO. 29711

RATES OF ENERGY TRANSFER FROM N2 A CUBED SIGMA(+) U TO VARIOUS MOLECULES. INITIAL AND FINAL QUANTUM STATES IN THE TRANSFER TO NOX SQUARED PI AND HG(6 1S SUB O), AND VIBRATIONAL RELAXATION OF N2 A CUBED SIGMA(+) U (V EQUALS 1) IN HELIUM.
12481 APTIC NO. 29750

IODIMETRIC METHODS

THE MEASUREMENT OF ATMOSPHERIC POLLUTION IN GERMANY.
12340 APTIC NO. 29066

STUDIES IN INDOOR SWIMMING POOLS WITH OZONIZATION PLANTS.
12353 APTIC NO. 29999

IODINE

PERFORMANCE OF CHARCOAL-IMPREGNATED FILTER PAPER TYPE CP-20 FOR COLLECTING AIRBORNE RADIOIODINE.
12185 APTIC NO. 29870

MATERIALS FOR REFERENCE ABOUT ENVIRONMENTAL POLLUTION CONTROL.
12651 APTIC NO. 29818

IODINE COMPOUNDS

PHYSICAL-CHEMICAL PROBLEMS OF AIR POLLUTION.
11996 APTIC NO. 29786

ON THE EFFECT OF ACCOMPANYING GASES IN QUANTITATIVE ANALYSIS OF HYDROGEN SULFIDE USING METHYLENE BLUE.
12343 APTIC NO. 29505

STUDIES IN INDOOR SWIMMING POOLS WITH OZONIZATION PLANTS.
12353 APTIC NO. 29999

SCAVENGING OF AEROSOL PARTICLES BY SPRAYS.
12437 APTIC NO. 29711

TRACE ELEMENTS IN ATMOSPHERIC PRECIPITATION AROUND THE OTKAZNOE RESERVOIR.
12432 APTIC NO. 29910

RATES OF ENERGY TRANSFER FROM N2 A CUBED SIGMA(+) U TO VARIOUS MOLECULES. INITIAL AND FINAL QUANTUM STATES IN THE TRANSFER TO NOX SQUARED PI AND HG(6 1S SUB O), AND VIBRATIONAL RELAXATION OF N2 A CUBED SIGMA(+) U (V EQUALS 1) IN HELIUM.
12481 APTIC NO. 29750

IONIZATION

SOME ASPECTS OF THE METAL ION CHEMISTRY OF THE EARTH'S ATMOSPHERE.
12421 APTIC NO. 28891

EFFECT OF SOLUBILITIES OF GASES ON THEIR SCAVENGING BY RAINDROPS.
12442 APTIC NO. 29780

INELASTIC ELECTRON SCATTERING FROM NITROUS OXIDE BETWEEN 5.0 AND 20.0 EV ENERGY LOSS.
12521 APTIC NO. 27460

ELECTRON ENERGY LOSS SPECTRA OF NO2 AND SO2.
12480 APTIC NO. 30079

GENERATION AND MEASUREMNT OF AIR IONS FOR MEDICAL APPLICATIONS AND THER INFLUENCE ON REACTION TIME AND MONOSYNAPTIC REFLEX OF MAN.
12547 APTIC NO. 29267

IONS

COMPARISON OF THE CATALYTIC ACTIVITY OF MANGANESE DIOXIDE OF ELECTROLYTIC ORIGIN AND OF MANGANESE HYDROXIDE IN THE OXIDATION OF CARBON OXIDES. IV. ADSORPTION AND DESORPTION OF THE REAGENTS AND THE PRODUCTS OF THE REACTION ON MANGANESE HYDROXIDE.
12192 APTIC NO. 29506

CATALYTIC OXIDATION OF CARBON MONOXIDE IN THE PRESENCE OF RECENTLY SYNTHESIZED PLATINUM COMPLEXES.
12117 APTIC NO. 29896

A METER FOR THE SITE DETERMINATION OF HYDROLYSABLE FLUORIDES IN SULPHUR HEXAFLUORIDE.
12336 APTIC NO. 30007

SOME ASPECTS OF THE METAL ION CHEMISTRY OF THE EARTH'S ATMOSPHERE.
12421 APTIC NO. 28891

THE STUDY OF THE EVOLUTION OF ATOMIC SIZED PARTICLES IN THE AIR.
12436 APTIC NO. 29946

DISSOCIATIVE ELECTRON ATTACHMENT PROCESSES IN SO2 AND NO2.
12444 APTIC NO. 30008

CHEMICAL PROCESSES AT THE AIR-SEA INTERFACE: THE BEHAVIOR OF FLUORINE.
12468 APTIC NO. 30126

METHANESULFENYL CHLORIDE. V. THE SPONTANEOUS DECOMPOSITION OF METHANESULFENYL CHLORIDE AND METHYLSULFUR TRICHLORIDE.
12485 APTIC NO. 29674

VIBRATIONAL EXCITATION AND COMPOUND STATES IN NO.
12510 APTIC NO. 30037

GENERATION AND MEASUREMNT OF AIR IONS FOR MEDICAL APPLICATIONS AND THER INFLUENCE ON REACTION TIME AND MONOSYNAPTIC REFLEX OF MAN.
12547 APTIC NO. 29267

INFLUENCE OF PROLONGED CARBON MONOXIDE EXPOSURE AND HIGH ALTITUDE ON THE COMPOSITION OF BLOOD AND URINE IN MAN.
12559 APTIC NO. 29613

RENAL FUNCTION DURING PROLONGED EXPOSURE TO HYPOXIA AND CARBON MONOXIDE. II. ELECTROLYTE HANDLING.
12577 APTIC NO. 29805

OZONE AND AIR IONS ACCOMPANYING BIOLOGICAL APPLICATIONS OF ELECTRIC FIELDS.
12594 APTIC NO. 29897

IRELAND

THE ULTRA-VIOLET PHOTOLYSIS OF OZONE IN THE PRESENCE OF WATER VAPOUR.
12435 APTIC NO. 30012

THE ULTRA-VIOLET PHOTOLYSIS OF OZONE IN THE PRESENCE OF MOLECULAR OXYGEN.
12500 APTIC NO. 29778

COMPARATIVE STUDY OF CERTAIN PROVISIONS IN MEMBER STATES FOR CONTROLLING AIR POLLUTION.
12656 APTIC NO. 30052

IRON

BASIC RESEARCH ON SMOKE DESULFURIZATION BY LIME-METALS, 1ST REPORT - DESULFURIZATION EFFECT BY ADDITION OF METAL.
12154 APTIC NO. 29478

DUST COLLECTOR FOR ELECTRIC FURNACE MANUFACTURING FERROALLOY.
12123 APTIC NO. 29481

PREVENTION OF AIR POLLUTION ON IRON FOUNDRY.
12178 APTIC NO. 29602

AN EXPERIMENT ON VALVE RECESSION BY NON-LEADED GASOLINE.
12222 APTIC NO. 29656

DEVELOPMENT OF GAS PURIFICATION INSTALLATIONS FOR ELECTRIC MELTING FURNACES.
12204 APTIC NO. 29740

ACID MIST PRECIPITATOR MADE OF TEFLON FIBER.
12061 APTIC NO. 29833

THE NEW DUPLEX IRON MELTING PLANT AT THE M. BUSCH KG IN WEHRSTAPEL.
12094 APTIC NO. 29861

REMOVAL OF BROWN FUME FROM WASTE GASES OF OPEN HEARTH FURNACE OXYGEN STEELMAKING PROCESS.
12194 APTIC NO. 29945

AIR FILTRATION SYSTEM FOR ELECTRIC FURNACE SWITCH GEAR AT LUKENS STEEL.
12065 APTIC NO. 30018

A PHOTOGRAPHIC METHOD OF DETERMINING THE EMISSION OF DUST GENERATED BY INDUSTRIAL MACHINERY.
12254 APTIC NO. 29544

AIR POLLUTION.
12363 APTIC NO. 29510

POLLUTIONS AND TOKYO METROPOLITAN GOVERNMENT.
12365 APTIC NO. 29973

DISSIPATION AND PRECIPITATION OF DUST EMITTED BY A STEELWORKS.
12466 APTIC NO. 29829

DISSIPATION OF SO2 GENERATED IN A STEELWORK INTO THE GROUND LAYER OF THE ATMOSPHERE.
12467 APTIC NO. 29867

EXPERIENCE WITH INDUSTRIAL MULTI-FLUE CHIMNEYS OF 100-200 IN HEIGHT.
12473 APTIC NO. 29890

CORROSION RATES OF MILD STEEL IN COASTAL, INDUSTRIAL, AND INLAND AREAS OF NORTHERN CALIFORNIA.
12620 APTIC NO. 28810

AIR POLLUTION AND ATMOSPHERIC CORROSION.
12613 APTIC NO. 29222

THE MECHANISM OF ATMOSPHERIC RUSTING AND THE EFFECT OF CU AND P ON THE RUST FORMATION OF LOW ALLOY STEELS.
12615 APTIC NO. 29631

EFFECT OF LOW SILICIUM CONTENT AND SOME SURFACE TREATMENT ON THE OXIDATION OF CARBON STEELS IN CARBON DIOXIDE ATMOSPHERES AT MEDIUM TEMPERATURES.
12611 APTIC NO. 29995

CORROSION OF NACL-CONTAMINATED FE IN HUMID ATMOSPHERE OF LOW O2 CONTENT.
12621 APTIC NO. 30112

HOW EMISSION CONTROL AFFECTS MELTING COSTS.
12628 APTIC NO. 29879

THE COSTS FOR MAINTENANCE OF CLEAN AIR. THE INFLUENCE OF SOCIAL COSTS ON THE SELECTION OF AN INDUSTRIAL SITE.
12633 APTIC NO. 29923

EXPANSION AND STRENGTHENING OF AIR POLLUTION CONTROL COUNTERMEASURES.
12671 APTIC NO. 29495

PRESENT SITUATION OF ADMINISTRATION CONCERNING POLLUTIONS.
12648 APTIC NO. 29598

POLLUTIONS PREVENTION PLAN FOR CHIBA AND ICHIHARA CITIES IN CHIBA PREFECTURE.
12650 APTIC NO. 29813

CASTING WORK ENVIRONMENTS AND PUBLIC NUISANCE.
12655 APTIC NO. 29975

IRON COMPOUNDS

CAUSES, MEASUREMENT AND LIMITATION OF PARTICULATE EMISSION FROM OIL-FIRED STEAM BOILERS.
12000 APTIC NO. 30021

PROCESS FOR THE SEPARATION OF SULFUR FROM GAS.
12052 APTIC NO. 29273

DUST COLLECTOR FOR ELECTRIC FURNACE MANUFACTURING FERROALLOY.
12123 APTIC NO. 29481

HEAT EXTRACTION AIDS DEPOLLUTION OF GASES AND WATER IN CHEVROLET FOUNDRY.
12097 APTIC NO. 29523

ADSORPTION OF HYDROGEN AND CARBON MONOXIDE AND THEIR MIXTURES ON IRON FISCHER-TROPSCH CATALYSTS. PART I: SYNTHESIS EXPERIMENTS AND ADSORPTION STUDIES WITH HYDROGEN AND CARBON MONOXIDE ON PROMOTED AND UNPROMOTED IRON CATALYSTS.
12216 APTIC NO. 29701

CATALYTIC OXIDATION OF CARBON MONOXIDE IN THE PRESENCE OF RECENTLY SYNTHESIZED PLATINUM COMPLEXES.
12117 APTIC NO. 29896

HIGH-CONCENTRATION SULFUR DIOXIDE FROM CALCINING PYRITES IN THE DKSM FURNACE.
12157 APTIC NO. 29982

GASOLINE WITHOUT LEAD. TECHNICAL POSSIBILITIES FOR A NON-LEADED FUEL.
12084 APTIC NO. 30010

CATALYTIC REDUCTION OF SULFUR DIOXIDE ON IRON-ALUMINA BIFUNCTIONAL CATALYSTS.
12152 APTIC NO. 30064

ON A DUST-COLLECTING DEVICE FOR A FERROSILICON FURNACE.
12219 APTIC NO. 30086

EXPERIMENTAL INVESTIGATION OF THE PROCESS OF CENTRIFUGAL DUST SEPARATION.
12245 APTIC NO. 30133

DETERMINATION OF IRON, CHROMIUM, COBALT, NICKEL, AND SCANDIUM IN ASBESTOS BY NEUTRON ACTIVATION ANALYSIS.
12292 APTIC NO. 30129

ON AIR POLLUTION IN MIZUSHIMA AREA.
12390 APTIC NO. 29895

SEASONAL VARIATION OF THE CONCENTRATION OF HEAVY METALS IN SUSPENDED DUST ON THE MAIN STREETS.
12384 APTIC NO. 30025

SOME ASPECTS OF THE METAL ION CHEMISTRY OF THE EARTH'S ATMOSPHERE.
12421 APTIC NO. 28891

TRACE ELEMENTS IN ATMOSPHERIC PRECIPITATION AROUND THE OTKAZNOE RESERVOIR.
12432 APTIC NO. 29910

BORDEAUX. STUDY OF ATMOSPHERIC POLLUTION IN THE BUILT-UP AREA.
12420 APTIC NO. 30109

COMPLEX ALKALI IRON SULFATES A CONTRIBUTION TO THE THERMODYNAMICS OF FIRESDIDE HIGH-TEMPERATURE CORROSION.
12616 APTIC NO. 29783

IRON OXIDES

PROCESS FOR THE SEPARATION OF SULFUR FROM GAS.
12052 APTIC NO. 29273

DEVELOPMENT OF GAS PURIFICATION INSTALLATIONS FOR ELECTRIC MELTING FURNACES.
12204 APTIC NO. 29740

ELECTRIC DUST COLLECTION DEVICE.
12151 APTIC NO. 29819

THE EFFECT OF CATALYST POISONS ON THE ACTIVITY OF CARBON MONOXIDE SHIFT CATALYSTS.
12212 APTIC NO. 29944

ON A DUST-COLLECTING DEVICE FOR A FERROSILICON FURNACE.
12219 APTIC NO. 30086

VALUE ANALYSIS OF COAL.
12629 APTIC NO. 30122

IRRADIATION CHAMBERS

INVESTIGATION OF ACTIVATION ANALYSIS OF TRACE MERCURY IN GAS BY RADIOISOTOPE TRACER METHOD.
12328 APTIC NO. 29770

EXPERIMENT ON PHOTOCHEMICAL REACTION OF MOTOR EXHAUST GAS.
12469 APTIC NO. 29500

AN EXPERIMENTAL STUDY OF PHOTOCHEMICAL OXIDATION OF ORGANIC SUBSTANCES IN THE ATMOSPHERE.
12441 APTIC NO. 29681

THE STUDY OF THE EVOLUTION OF ATOMIC SIZED PARTICLES IN THE AIR.
12436 APTIC NO. 29946

PHOTOCHEMICAL REACTIONS OF MOTOR VEHICLE EXHAUST GASES.
12402 APTIC NO. 29960

ISOBUTANES

ANALYSIS OF HC OF LOW GRADE IN ATMOSPHERE.
12391 APTIC NO. 29482

ISOPENTANES

ANALYSIS OF HC OF LOW GRADE IN ATMOSPHERE.
12391 APTIC NO. 29482

ISOTOPES

PERFORMANCE OF CHARCOAL-IMPREGNATED FILTER PAPER TYPE CP-20 FOR COLLECTING AIRBORNE RADIOIODINE.
12185 APTIC NO. 29870

INVESTIGATION OF ACTIVATION ANALYSIS OF TRACE MERCURY IN GAS BY RADIOISOTOPE TRACER METHOD.
12328 APTIC NO. 29770

PRODUCTION OF GASES OF KNOWN SPECIFIC ACTIVITY IN A REACTOR FOR CALIBRATING GASEOUS EFFLUENT MONITORS.
12264 APTIC NO. 29848

FRACTIONATION OF OXYGEN ISOTOPES BETWEEN NO AND H20.
12297 APTIC NO. 30114

IN-CLOUD SCAVENGING ANALYSIS FROM COSMOGENIC RADIONUCLIDE MEASUREMENTS.
12440 APTIC NO. 29694

PARTICLE AND DEUTERIUM CONTENT IN SNOW.
12449 APTIC NO. 29775

ITALY

PROBLEMS OF AERATION OF THE CRANKCASE OF RECIPROCATING ENGINES WITH AN OTTO WORK CYCLE.
12009 APTIC NO. 29721

COMPARATIVE STUDY OF CERTAIN PROVISIONS IN MEMBER STATES FOR CONTROLLING AIR POLLUTION.
12656 APTIC NO. 30052

J

JAPAN

AIR POLLUTANTS GENERATED IN INTRA-FURNACE COMBUSTION.
12020 APTIC NO. 29532

COMBUSTION OF WASTE OIL FROM COAL.
12043 APTIC NO. 29534

NITROGEN OXIDES ANALYSIS.
12042 APTIC NO. 29538

HEAVY METAL POLLUTION IN THE ONAHAMA INDUSTRIAL AREA. 1ST REPORT. DISTRIBUTION OF HEAVY METALS IN SOIL.
12006 APTIC NO. 29539

PROBLEMS OF PUBLIC NUISANCE CAUSED BY BAD ODORS IN HYOGO PREFECTURE.
12029 APTIC NO. 29599

DETERMINATION OF LEAD CONTENTS IN AUTOMOBILE EXHAUST GAS.
12013 APTIC NO. 29661

QUALITATIVE ANALYSIS OF EXHAUST GAS FROM FISH MEAL PLANT.
12028 APTIC NO. 29662

INVESTIGATION OF HEAVY METAL POLLUTION IN IWAKI CITY.
12007 APTIC NO. 29787

RECENT TREND AND PROBLEMS OF INDUSTRIAL WASTES TREATING EQUIPMENT.
12041 APTIC NO. 29827

EXPERIMENTAL STUDY ON PLASTICS INCINERATION.
12017 APTIC NO. 29841

SOME PROBLEMS ON THE OFFENSIVE ODOR IN HYOGO PREFECTURE.
12030 APTIC NO. 29842

COUNTERMEASURES ON AUTOMOBILE EXHAUST GAS.
12050 APTIC NO. 29935

ON COMPOSITION AND LEAD CONTENT OF COMMERCIAL GASOLINE.
12048 APTIC NO. 29936

TREATMENT OF MUNICIPAL TRASH BY SANITATION TRUCK.
12049 APTIC NO. 29979

A NEW ENVIRONMENTAL POLLUTANT - POLYCHLORINATED BIPHENYLS (PCB).
12044 APTIC NO. 29984

BASIC RESEARCH ON SMOKE DESULFURIZATION BY LIME-METALS, 2ND REPORT - EFFECT OF METAL ADDITION ON CALCINATION OF LIME.
12153 APTIC NO. 29080

PURIFICATION DEVICE FOR AUTOMOTIVE EXHAUST GAS.
12156 APTIC NO. 29439

ON DISPOSAL OF PLASTIC WASTES (PVC) BY FLUID LAYER OF MEDIUM.
12074 APTIC NO. 29449

UTILIZATION OF CATALYST IN AIR POLLUTION CONTROL (4).
12239 APTIC NO. 29477

BASIC RESEARCH ON SMOKE DESULFURIZATION BY LIME-METALS, 1ST REPORT - DESULFURIZATION EFFECT BY ADDITION OF METAL.
12154 APTIC NO. 29478

STUDY ON MECHANISM OF REACTION WITH SULFUR DIOXIDE OF LIMESTONE POWDER BLOWN INTO COMBUSTION GAS.
12146 APTIC NO. 29479

DUST COLLECTOR FOR ELECTRIC FURNACE MANUFACTURING FERROALLOY.
12123 APTIC NO. 29481

ON CONDITIONS FOR PROPER USE OF ACTIVATED CARBON AS AN AIR PURIFICATION AGENT (2) - ITS EFFICIENCY FOR REMOVAL OF SO2 GAS.
12113 APTIC NO. 29496

ADSORPTION OF SULFUR DIOXIDE GAS BY ACTIVATED CARBON OR MOLECULAR SIEVE.
12201 APTIC NO. 29497

PRACTICAL ANALYTICAL METHOD OF EXHAUST REFLUX EFFECT ON NOX EMISSION CONTROL.
12102 APTIC NO. 29499

AN EXPERIMENTAL STUDY ON THE PERFORMANCE OF A MULTIFUEL ENGINE. PART 3. AN ATTEMPT OF M-COMBUSTION APPLIED TO A SWIRL CHAMBER.
12183 APTIC NO. 29520

EMISSIONS FROM INTERNAL COMBUSTION ENGINE.
12225 APTIC NO. 29531

EXHAUST GAS CLEANER FOR DIESEL ENGINES.
12221 APTIC NO. 29533

CO BOILER OF FLUIDIZED BED TYPE CATALYTIC CRACKING PROCESS PRODUCIN NO LEAD GASOLINE.
12237 APTIC NO. 29535

MITSUBISHI-RESEARCH DISC SCRUBBER.
12080 APTIC NO. 29536

MITSUBISHI-RESEARCH WEDGE SCRUBBER.
12081 APTIC NO. 29537

OUTLOOK OF ENVIRONMENTAL POLLUTION AND ITS PREVENTION TECHNOLOGY.
12124 APTIC NO. 29600

ODOR TREATMENT AND ITS COST AT RENDERING FACTORIES.
12211 APTIC NO. 29601

PREVENTION OF AIR POLLUTION ON IRON FOUNDRY.
12178 APTIC NO. 29602

HYDROGENIZATION DESULFURIZATION METHOD OF HEAVY HC.
12189 APTIC NO. 29603

COUNTERMEASURES ON PREVENTION OF INDUSTRIAL POLLUTIONS--PART II ON SULFURIC ACID GAS.
12210 APTIC NO. 29646

METHOD TO REMOVE HARMFUL SUBSTANCES FROM STACK GAS BY-PRODUCING AMMONIUM SULFATE AND OTHERS (XV) - ACTIVATION ENERGY OF ACTIVATED CARBON FOR SO2 ADSORPTION.
12161 APTIC NO. 29648

AN EXPERIMENT ON VALVE RECESSION BY NON-LEADED GASOLINE.
12222 APTIC NO. 29656

COLLECTION EFFICIENCIES OF GLASS FIBER FILTERS FOR EACH SIZE OF LEAD AEROSOLS.
12140 APTIC NO. 29664

ENVIRONMENTAL POLLUTION CONTROL MEASURES IN WEST EUROPE AND PROBLEMS OF CARBIDE ELECTRIC FURNACE DUST IN JAPAN.
12073 APTIC NO. 29675

DEVICE TO HOLD IN PLACE ATOMIZER NOZZLES OF A WASHER DEVICE FOR SULFUR OXIDE GAS CONTAINED IN COMBUSTION EXHAUST GAS FROM BOILER.
12138 APTIC NO. 29685

DEVELOPMENT OF A NEW DUST COLLECTOR.
12056 APTIC NO. 29686

EFFECTS OF THE ADDITION OF BARIUM COMPOUND ON THE SMOKE CONCENTRATION OF DIESEL EXHAUST GAS.
12057 APTIC NO. 29696

PERFORMANCE OF CYCLONE FOR LOW-PRESSURE AIR FLOW.
12182 APTIC NO. 29728

FILTRATION OF MULTI-DISPERSING AEROSOL UNDER THE FORCE OF GRAVITY.
12115 APTIC NO. 29730

ABSORPTION OF SULFUROUS ACID GAS BY WATER SOLUTION OF POTASSIUM PHOSPHATE.
12172 APTIC NO. 29731

ON REGENERATION OF ACTIVATED CARBON HAVING ADSORBED SO2.
12173 APTIC NO. 29732

NEW METHOD OF MANUFACTURING CATALYST FOR EXHAUST GAS.
12133 APTIC NO. 29733

DESULFURIZATION.
12242 APTIC NO. 29742

PROBLEM OF OBNOXIOUS ODOR IN INDUSTRIAL POLLUTIONS.
12202 APTIC NO. 29745

MANUFACTURING OF INDUSTRIAL CATALYST COMPRISING ALUMINA AS CARRIER. (Arumina o tantai to shita kogyo shokubai no seizo). Text in Japanese. Preprint, Japan Industrial Technology Assoc., Tokyo, 12p., 1970. 5 refs. (Presented at the Industrial Catalyst Seminar Tokyo, Japan, Nov. 9, 1970.)
12158 APTIC NO. 29755

ON PUBLIC NUISANCE BY, AND ENVIRONMENTAL HYGIENE OF, PAINT MANUFACTURING INDUSTRY.
12059 APTIC NO. 29761

EFFICIENCY OF FILTERS FOR RADIOACTIVE AEROSOL.
12155 APTIC NO. 29768

ADSORPTIVITY OF DESULFURIZING ACTIVATED CARBON FOR SULFUROUS ACID GAS (II) - EFFECT OF THE ADSORPTION - RINSING PROCESS ON THE ADSORPTIVITY.
12238 APTIC NO. 29788

STEAM-SMOKE MIST CONTACT DEVICE.
12174 APTIC NO. 29792

ELECTRIC DUST COLLECTION DEVICE.
12151 APTIC NO. 29819

POLLUTION CONTROL AT THE SAGAMIHARA PLANT OF OUR TOKYO MACHINERY WORKS.
12199 APTIC NO. 29821

REPORT ON THE INVESTIGATION INTO THE MAINTENANCE AND THE SUPERVISION OF AIR-CLEANING APPARATUS AS AN INDICATION OF AIR POLLUTION.
12122 APTIC NO. 29840

EXPERIMENTAL RESEARCH ON LOW EXCESS AIR COMBUSTION IN BOILER BURNING HEAVY OIL ONLY.
12142 APTIC NO. 29860

PERFORMANCE OF CHARCOAL-IMPREGNATED FILTER PAPER TYPE CP-20 FOR COLLECTING AIRBORNE RADIOIODINE.
12185 APTIC NO. 29870

UTILIZATION OF CATALYST IN AIR POLLUTION CONTROL (5).
12240 APTIC NO. 29898

CONTROL OF EXHAUST GAS EMISSION OF MITSUBISHI COLT GALANT.
12228 APTIC NO. 29901

EXHAUST GAS PURIFIER.
12179 APTIC NO. 29905

DIRECT DESULFURIZATION OF HEAVY OIL.
12111 APTIC NO. 29908

STUDY ON AUTO EXHAUST.
12241 APTIC NO. 29909

EFFECTS OF WATER INJECTION IN INLET TUBE ON NO CONCENTRATION IN DIESEL EXHAUST.
12220 APTIC NO. 29911

DESULFURIZATION OF EXHAUST GAS.
12078 APTIC NO. 29927

EQUALIZATION OF PARTICLE TRANSFER IN TRANSFERABLE STRATUM.
12144 APTIC NO. 29928

TO PREVENT HEAVY OIL COMBUSTION GAS FROM PRODUCING BLACK SMOKE.
12213 APTIC NO. 29930

INVESTIGATION OF HEAVY OIL DESULFURIZATION IN FIXED-BED CONTACT REACTORS.
12196 APTIC NO. 29931

CONTACT HYDRODESULFURIZATION OF PETROLEUM RESIDUAL OIL.
12200 APTIC NO. 29932

HYDRODESULFURIZATION OF HEAVY QUALITY OIL, RESIDUAL OIL, ETC.. (Jushitsuyu, zansayu to no suisokadatsuryuho). Text in Japanese. (Ishikawajima-Harima Heavy Industries (Japan)) Japan. Pat. Sho 46-819. 3p., Jan. 9, 1971. (Appl. Dec. 25, 1967, claims not given).
12218 APTIC NO. 29933

METHOD TO MANUFACTURE CATALYST FOR CLEANING OF EXHAUST GAS FROM INTERNAL COMBUSTION ENGINES.
12150 APTIC NO. 29937

ADSORPTIVITY OF DESULFURIZING ACTIVATED CARBON FOR SULFUROUS ACID GAS (I). PERFORMANCE VARIATION OF ACTIVATED CARBON IN PILOT PLANT.
12206 APTIC NO. 29939

METHOD TO ARREST AND REMOVE WHITE SMOKE PRODUCED FROM MOLTEN ZINC PLATING PROCESS.
12135 APTIC NO. 29940

STUDIES ON AIR POLLUTION CONTROL BY ADDITIVE INJECTION. PART II - PREVENTION OF CLOGGING AT HIGH TEMPERATURE HEATING SURFACE OF BOILER BY ADDING MG(OH)2 POWDER.
12075 APTIC NO. 29941

ACTIVATED CARBON INDUSTRY AND PROBLEMS IN FUTURE - SPHERICAL ACTIVATED CARBON FROM COAL.
12235 APTIC NO. 29942

DESULFURIZATION OF WASTE GASES AND FUELS.
12205 APTIC NO. 29957

STUDY ON THE DESULFURIZATION OF FLUE GAS BY THE USE OF DRY LIME.
12198 APTIC NO. 29972

METHOD TO MANUFACTURE CATALYST FOR DESULFURIZATION BY HYDROGEN ADDITION OF LIQUID HYDROCARBON.
12234 APTIC NO. 29974

CATALYST FOR HEAVY OIL DESULFURIZATION.
12224 APTIC NO. 29977

ON THE REACTIVITY OF AMINES WITH OZONE.
12190 APTIC NO. 29978

COMBUSTION OF WASTES CENTERING AROUND REMOVAL OF NOXIOUS GAS.
12077 APTIC NO. 29985

REACTOR DEVICE FOR HEAVY OIL DESULFURIZATION.
12149 APTIC NO. 29987

METHOD FOR MANUFACTURING SPHERICAL ACTIVE CARBON FROM COAL.
12141 APTIC NO. 29988

STUDY ON THE DIRECT DESULFURIZATION OF HEAVY OIL.
12159 APTIC NO. 29989

GAS ADSORPTION BY VOLCANIC ASH.
12197 APTIC NO. 30030

ON DOUBLE HEAD-CUT CONES TYPE CENTRIFUGAL DUST COLLECTOR.
12148 APTIC NO. 30070

ON A DUST-COLLECTING DEVICE FOR A FERROSILICON FURNACE.
12219 APTIC NO. 30086

STUDY ON THE STRENGTH OF SUPER-HIGH ASSEMBLED MULTI-CYLINDER TYPE STACK.
12184 APTIC NO. 30093

DISPOSAL OF HC FROM OIL CONTAINING RESIDUAL OIL AFTER DISTILLATION USING HYDROGEN.
12162 APTIC NO. 30095

STUDY ON DESULFURIZATION BY THE INJECTION OF LIMESTONE POWDER INTO FURNACE OF OIL FIRING BOILER (PART I).
12145 APTIC NO. 30131

REPORT FOR THE INVESTIGATION ON THE METHOD OF SO2 TEST.
12301 APTIC NO. 29381

INVESTIGATION ON THE MEASURING ERRORS OF CONDUCTOMETRIC SULFUR DIOXIDE ANALYZER USED FOR AIR POLLUTION MONITOR.
12356 APTIC NO. 29398

MEASUREMENT OF GAS CONCENTRATION UTILIZING LIGHT SCATTERING BY PARTICULATES.
12352 APTIC NO. 29461

METAL COMPONENTS OF FLOATING DUST.
12286 APTIC NO. 29464

LUMINESCT SPECTROMETER ANALYSIS METHOD OF QUANTITATIVE ANALYSIS OF METALS IN DUST FLOATING IN ATMOSPHERE.
12279 APTIC NO. 29466

EXAMINATION OF QUANTITATIVE ANALYSIS METHOD OF FLUORINE IN VEGETABLE SAMPLES.
12302 APTIC NO. 29467

QUANTITATIVE ANALYSIS OF NO IN ATMOSPHERE - ON CHANGES IN SALTZMAN COEFFICIENT WITH CHANGE IN COMPOSITION OF SALTZMAN REAGENTS.
12308 APTIC NO. 29480

THEORETICAL CONSIDERATION IN THE MEASUREMENT OF SMOKE PARTICLES BY OWL (II) - EFFECT OF DISPERSION.
12298 APTIC NO. 29483

ON THE EFFECT OF ACCOMPANYING GASES IN QUANTITATIVE ANALYSIS OF HYDROGEN SULFIDE USING METHYLENE BLUE.
12343 APTIC NO. 29505

A FINDING CONCERNING A BASIC INVESTIGATION METHOD ON ODOR POLLUTION SEEN FROM ACTUAL EXPERIENCE. REPORT NO. 2 ON THE STUDIES OF OBNOXIOUS ODOR.
12294 APTIC NO. 29508

MEASURING METHOD OF OZONE BY CHEMILUMINECENCE.
12337 APTIC NO. 29665

OXIDATION OF NITROGEN MONOXIDE.
12320 APTIC NO. 29676

JIS ANALYTICAL PROCESS FOR NITROGEN OXIDES IN WASTE GAS.
12355 APTIC NO. 29677

ON MEASUREMENT OF ODOR.
12256 APTIC NO. 29726

PROGRESS IN MEASUREMENT OF AIR POLLUTION.
12350 APTIC NO. 29748

ON THE CONTINUOUS MEASUREMENT AND RECORDING OF OXIDANTS BY ELECTRIC CONDUCTIVITY METHOD.
12293 APTIC NO. 29758

TRIAL CONSTRUCTION OF NON-DISPERSION TYPE VISIBLE LIGHT GAS ANALYZE AND DETERMINATION OF NITROGEN DIOXIDE, CHLORINE, AND BROMINE.
12303 APTIC NO. 29762

INVESTIGATION OF ACTIVATION ANALYSIS OF TRACE MERCURY IN GAS BY RADIOISOTOPE TRACER METHOD.
12328 APTIC NO. 29770

STUDIES ON LEAD CHROMATE OBTAINED FROM TETRAALKYL LEAD IN LEADED GASOLINE. I. X-RAY DIFFRACTION TESTS OF THE LEAD CHROMATE CRYSTALS.
12296 APTIC NO. 29810

ENVIRONMENTAL POLLUTION AND ITS MEASUREMENTS (II).
12338 APTIC NO. 29843

DETERMINATION OF AROMATIC HYDROCARBONS EMITTED FROM THE DRY BATTERY PLANT.
12287 APTIC NO. 29862

ON THE MEASUREMENT AND ABSOLUTE CALIBRATION OF THE STRENGTH OF SOLAR RADIATION ENERGY.
12348 APTIC NO. 29863

MEASUREMENT OF ATMOSPHERIC DUST BY LIGHT SCATTERING METHOD AND HIGH VOLUME SAMPLER METHOD.
12357 APTIC NO. 29864

MEASUREMENTS OF AIRBORNE DUST.
12288 APTIC NO. 29885

GAS CHROMATOGRAPHIC ANALYSIS OF BENZENE AND TOLUENE IN AUTOMOBILE EXHAUST GAS.
12295 APTIC NO. 29907

STUDIES IN THE PSYCHOLOGY OF OLFACTION. (4). QUALITATIVE CLASSIFICATION OF ODORS.
12358 APTIC NO. 29929

GAS CHROMATOGRAPHIC ANALYSIS OF TRACES OF CO AND CO2.
12326 APTIC NO. 29938

A SHORT TERM DETERMINATION OF BENZO(A)PYRENE AND BENZO(K) FLUORANTHENE IN AIR POLLUTANTS.
12319 APTIC NO. 29965

AUTOMATIC MEASURING APPARATUS OF FLUORIDE GASSES IN AIR.
12299 APTIC NO. 29966

THE GAS CHROMATOGRAPHIC DETERMINATION OF PESTICIDES. (PART 3) DETERMINATION OF RESIDUES OF ORGANOPHOSPHORUS PESTICIDES.
12349 APTIC NO. 30134

DETERMINATION OF POLYNUCLEAR AROMATICS IN SUSPENDED PARTICLES.
12393 APTIC NO. 29462

REPORT ON LEAD POLLUTION SURVEY.
12361 APTIC NO. 29465

ANALYSIS OF HC OF LOW GRADE IN ATMOSPHERE.
12391 APTIC NO. 29482

AIR POLLUTION.
12363 APTIC NO. 29510

A STUDY ON THE ESTIMATION OF THE REGIONAL CENTRAL VALUE OF AIR POLLUTION FROM OBSERVED VALUES.
12383 APTIC NO. 29518

AIR POLLUTION BY EXHAUST GAS II. DETERMINATION OF LEAD AND CARBON MONOXIDE INSIDE A GARAGE AND A REPAIR FACTORY IN TOKYO CITY.
12397 APTIC NO. 29576

LEAD POLLUTION AND PHOTOCHEMICAL SMOG IN TOKYO.
12376 APTIC NO. 29647

TEN YEARS OF AIR POLLUTION IN HOKKAIDO.
12367 APTIC NO. 29727

URBAN POLLUTION BY AUTOMOBILE EXHAUST GAS.
12387 APTIC NO. 29744

A REPORT OF THE PERIODIC MEASUREMENT OF SOOT AND DUST, AND SULFUR OXIDES IN THE AIR AROUND THE HOSPITAL.
12381 APTIC NO. 29794

LEAD CONCENTRATION IN YOKOHAMA AIR.
12399 APTIC NO. 29814

SUSPENDED PARTICULATES IN OSAKA CITY.
12375 APTIC NO. 29853

ON AIR POLLUTION IN MIZUSHIMA AREA.
12390 APTIC NO. 29895

DISTRIBUTION OF LEAD IN THE AIR NEAR CITY ROADS.
12388 APTIC NO. 29918

POLLUTIONS AND TOKYO METROPOLITAN GOVERNMENT.
12365 APTIC NO. 29973

SEASONAL VARIATION OF THE CONCENTRATION OF HEAVY METALS IN SUSPENDED DUST ON THE MAIN STREETS.
12384 APTIC NO. 30025

STUDIES ON AIR POLLUTION DUE TO AUTOMOBILE EXHAUST. REPORT 15: AIR POLLUTION AT THE VICINITY OF BOOTHS IN MEISHIN HIGHWAY.
12389 APTIC NO. 30075

THE TENDENCY OF AIR POLLUTION AT NAGOYA CITY OBSERVED FROM THE WEIGHT OF FALLING DUST.
12396 APTIC NO. 30076

EXPERIMENT ON PHOTOCHEMICAL REACTION OF MOTOR EXHAUST GAS.
12469 APTIC NO. 29500

EVALUATION TRIALS OF URBAN AIR POLLUTION MODELS.
12439 APTIC NO. 29697

AIR POLLUTION CONTROL SYSTEM (3).
12401 APTIC NO. 29795

ESTIMATION OF GROUND LEVEL CONCENTRATION BY SMOKE-DIFFUSION WIND TUNNELS.
12462 APTIC NO. 29820

TURBULENT DIFFUSION THEORY TAKING TURBULENT BOUNDARY LAYER INTO CONSIDERATION.
12463 APTIC NO. 29822

ON THE DIFFUSION OF AUTO-EXHAUSTED GASES.
12464 APTIC NO. 29850

EFFECTS OF ATMOSPHERIC CONDITIONS ON AUTOMOBILE EXHAUST GAS COMPOSITIONS.
12461 APTIC NO. 29893

PHOTOCHEMICAL SMOG AND ITS REACTION MECHANISM.
12459 APTIC NO. 29934

PHOTOCHEMICAL REACTIONS OF MOTOR VEHICLE EXHAUST GASES.
12402 APTIC NO. 29960

ON PLUMBIC POLLUTION OF MUNICIPAL ATMOSPHERE--BEHAVIORS OF PLUMBIC COMPOUND AS AEROSOL.
12431 APTIC NO. 30073

STUDIES ON PHOTOCHEMICAL REACTION BETWEEN SULFURIC ACID GAS AND ORGANIC COMPOUNDS (2).
12512 APTIC NO. 29463

STUDIES ON PHOTOLYSIS OF NITORGEN OXIDE.
12513 APTIC NO. 29527

ELECTROSTATIC FILTER USING DIELECTRIC FILTER MATERIAL.
12515 APTIC NO. 29596

A FEW OBSERVATION ON THE GENERATION MECHANISM OF OBNOXIOUS ODOR.
12517 APTIC NO. 29649

ON ADHESION OF SMOKE MIST PARTICULATES FLOWING THROUGH BETWEEN PLAN PARALLEL PLATES.
12518 APTIC NO. 29729

THE STUDY OF THE REACTION OF HYDROGEN SULPHIDE WITH ATOMIC OXYGEN USING EMISSION SPECTRUM.
12516 APTIC NO. 29884

PHOTOCHEMICAL REACTION BETWEEN SO2 AND ORGANIC COMPOUNDS (II).
12514 APTIC NO. 29967

ADHESION TO PIPE S WALL WITH AEROSOL PARTICLES FLOWING IN A PIPE AS TURBULENT FLOW.
12523 APTIC NO. 30071

PATHOLOGICAL STUDY ON THE EXPERIMENTAL RABBITS AT AIR-POLLUTED AREA IN YOKKAICHI.
12590 APTIC NO. 29502

SEMI-AUTOMATIC DETERMINATION OF LEAD IN WIDE BLOOD.
12565 APTIC NO. 29663

ITAI-ITAI (OUCH-OUCH) DISEASE AND CADMIUM POLLUTION IN JAPAN.
12581 APTIC NO. 29673

THE RESEARCH FOR THE EFFECTS OF AIR POLLUTION ON THE HUMAN BODY. (II) THE RELATIONSHIP BETWEEN ASTHMA-LIKE DISEASES OF THE SCHOOL CHILDREN AND AIR POLLUTION IN KITAKYUSHU.
12524 APTIC NO. 29683

LEAD MEN HEADING TOWARD DESTRUCTION--SPREADING OMINOUS METAL POLLUTIONS.
12569 APTIC NO. 29789

EFFECTS OF SOOT AND SMOKE ON THE HEALTH OF SCHOOL CHILDREN.
12556 APTIC NO. 29791

SOME PLANS FOR FUTURE STUDIES FOR LOW LEVEL OF LEAD ON THE HUMAN BEING.
12553 APTIC NO. 29815

AIR POLLUTION BY TRACE METALS IN JAPAN.
12561 APTIC NO. 29816

FOUR-ALKYL LEAD AND ENVIRONMENTAL POLLUTION.
12588 APTIC NO. 29825

STUDY ON THE EFFECTS OF AIR POLLUTION ON HUMAN BODY--WITH SPECIAL REFERENCE TO OBJECTIVE, COMPARATIVE STUDY OF ALL THE INHABITANTS BY CHEST X-RAY RINDINGS.
12554 APTIC NO. 29904

STUDIES ON PROGNOSIS OF CHRONIC BRONCHITIS.
12587 APTIC NO. 29916

EXPERIMENTAL STUDIES ON THE HEALTH EFFECTS OF AUTO EXHAUST GAS IN LOW CONCENTRATIONS. (REPORT 1) PRELIMINARY EXPERIMENT.
12589 APTIC NO. 29921

STUDIES ON AIR POLLUTION AND BRONCHIAL ASTHMA. REPORT 1.
12548 APTIC NO. 29925

EFFECTS OF ATMOSPHERIC LEAD ON TRAFFIC POLICEMEN IN A MEDIUM SIZED CITY.
12566 APTIC NO. 29958

PROCEEDINGS OF THE 9TH CONFERENCE OF JAPAN ASSOCIATION OF INDUSTRIAL HEALTH.
12526 APTIC NO. 29963

SOME HEALTH SURVEY RESULTS OF UNDERGROUND GARAGE WORKERS.
12568 APTIC NO. 30074

EFFECT OF AIR AND WATER POLLUTION ON AGRICULTURAL PRODUCTS BY CD, PB, ZN ATTRIBUTED TO MINE REFINERY IN ANNAKA CITY, GUNMA PREFECTURE.
12601 APTIC NO. 27489

ON DAMAGE TO PLANTS BY FLUORIDES IN EXHAUST GAS FROM TILE MANUFACTURING FACTORY.
12606 APTIC NO. 29597

ON COMPOSITE HARM TO PLANTS BY SULFUROUS ACID GAS AND OXIDANT.
12604 APTIC NO. 29671

DAMAGE TO PLANTS BY AIR POLLUTANTS.
12603 APTIC NO. 29746

COLLECTED PHOTOGRAPHS DEMONSTRATING PLANT DAMAGE BY AIR POLLUTION.
12591 APTIC NO. 29924

STUDIES ON THE SMOKE DAMAGE OF TREES. (I) ON THE ACUTE DAMAGE SYMPTOMS BY THE SO2.
12607 APTIC NO. 29976

AIR POLLUTION AND ATMOSPHERIC CORROSION.
12613 APTIC NO. 29222

THE MECHANISM OF ATMOSPHERIC RUSTING AND THE EFFECT OF CU AND P ON THE RUST FORMATION OF LOW ALLOY STEELS.
12615 APTIC NO. 29631

THE INFLUENCE OF AIR POLLUTION UPON THE DISCOLORATION OF THE DYED STUFF AND THE DECREASE OF TENSILE STRENGTH OF SOME FIBERS.
12612 APTIC NO. 29717

STANDARD FADING CLOTHES FOR OXIDANTS.
12619 APTIC NO. 29866

ON EXAMPLE OF PRACTICAL APPLICATION OF DUST COLLECTOR FOR ELECTRIC FURNACE FOR FERRO-ALLOY.
12632 APTIC NO. 29892

ON OUTLINE OF MACHINERY CREDIT INSURANCE AND ITS APPLICATION TO DUST COLLECTION EQUIPMENT.
12634 APTIC NO. 30087

THE GUIDANCE STANDARD OF THE EQUIPMENT FOR TREATING EXHAUST GASES FROM THE FACTORY (FORMALDEHYDE):APR. 1970.
12636 APTIC NO. 29756

STANDARDS OF AIR POLLUTION.
12643 APTIC NO. 29776

EXPANSION AND STRENGTHENING OF AIR POLLUTION CONTROL COUNTERMEASURES.
12671 APTIC NO. 29495

COLLECTION OF LEGISLATIONS RELATED WITH MITI CONCERNING POLLUTIONS.
12646 APTIC NO. 29504

NEW TREND IN POLLUTIONS COUNTERMEASURES IN THE 70 S.
12660 APTIC NO. 29507

ON THE BASIC LAW FOR ENVIRONMENTAL POLLUTION CONTROL, NOISE CONTROL LAW, WATER POLLUTION PREVENTION LAW, AND AIR POLLUTION PREVENTION LAW.
12670 APTIC NO. 29509

ADDENDUM TO ENVIRONMENTAL POLLUTIONS IN KAWASAKI CITY.
12647 APTIC NO. 29511

PRESENT SITUATION OF ADMINISTRATION CONCERNING POLLUTIONS.
12648 APTIC NO. 29598

CHIBA PREFECTURAL ORDINANCE ON POLLUTIONS CONTROL AND ENFORCEMENT REGULATION OF ORDINANCE.
12649 APTIC NO. 29679

POLLUTIONS PREVENTION PLAN FOR CHIBA AND ICHIHARA CITIES IN CHIBA PREFECTURE.
12650 APTIC NO. 29813

MATERIALS FOR REFERENCE ABOUT ENVIRONMENTAL POLLUTION CONTROL.
12651 APTIC NO. 29818

POPULATION PLANTS TREES: ENVIRONMENTAL PROTECTION IN JAPAN.
12652 APTIC NO. 29859

TOKYO FIGHTS POLLUTION. AN URGENT APPEAL FOR REFORM.
12653 APTIC NO. 29888

CASTING WORK ENVIRONMENTS AND PUBLIC NUISANCE.
12655 APTIC NO. 29975

CHANGE IN POLLUTANTS AND FUTURE PROBLEMS.
12680 APTIC NO. 29743

ENVIRONMENT PRESERVATION - FROM THE ECOLOGICAL POINT OF VIEW.
12678 APTIC NO. 29961

JET AIRCRAFT

EMISSION OF AIR POLLUTANTS FROM AIRCRAFT JET ENGINES.
12035 APTIC NO. 29734

JET AIRCRAFT AIR POLLUTANT PRODUCTION AND DISPERSION.
12016 APTIC NO. 30130

QUANTITATIVE ALDEHYDE DETERMINATION IN THE AIR OF WORKING PLACES.
12317 APTIC NO. 30023

CALCULATION OF A JET AXIS IN A DRIFTING FLOW.
12507 APTIC NO. 30042

K

KETONES

A PROGRAM TO SAMPLE AND ANALYZE AIR POLLUTION IN THE VICINITY OF A CHEMICAL RECLAMATION PLANT.
12039 APTIC NO. 29698

PHOTOCHEMICAL SMOG AND ITS REACTION MECHANISM.
12459 APTIC NO. 29934

KIDNEYS

ON HYGIENIC AND TOXICOLOGICAL PROBLEMS OF POLLUTION BY ARSENIC.
12534 APTIC NO. 29587

RENAL FUNCTION DURING PROLONGED EXPOSURE TO HYPOXIA AND CARBON MONOXIDE. I. GLOMERULAR FILTRATION AND PLASMA FLOW.
12576 APTIC NO. 29615

RENAL FUNCTION DURING PROLONGED EXPOSURE TO HYPOXIA AND CARBON MONOXIDE. II. ELECTROLYTE HANDLING.
12577 APTIC NO. 29805

RESEARCH ON THE LEAD INTOXICATION OF THE GALLINACEANS.
12597 APTIC NO. 30033

KILNS

PROBLEMS OF PUBLIC NUISANCE CAUSED BY BAD ODORS IN HYOGO PREFECTURE.
12029 APTIC NO. 29599

CEMENT DUST AT GREAT BRITAIN.
12001 APTIC NO. 29832

MITSUBISHI-RESEARCH DISC SCRUBBER.
12080 APTIC NO. 29536

PROGRESS IN DEDUSTING TECHNIQUE IN CEMENT WORKS.
12125 APTIC NO. 29830

METHOD TO ARREST AND REMOVE WHITE SMOKE PRODUCED FROM MOLTEN ZINC PLATING PROCESS.
12135 APTIC NO. 29940

METHOD FOR MANUFACTURING SPHERICAL ACTIVE CARBON FROM COAL.
12141 APTIC NO. 29988

ON DAMAGE TO PLANTS BY FLUORIDES IN EXHAUST GAS FROM TILE MANUFACTURING FACTORY.
12606 APTIC NO. 29597

KONIMETERS

ATMOSPHERIC POLLUTANTS FRENCH LEGISLATION. STANDARD MEASURING METHODS. RECENT COMMERCIAL APPARATUS.
12638 APTIC NO. 29003

KRAFT PULPING

MERCURY IN THE ENVIRONMENT.
11992 APTIC NO. 29489

OXIDATION OF SODIUM SULFIDE AND MERCAPTIDE IN BLACK LIQUOR.
12071 APTIC NO. 29278

AIR POLLUTION: CONTROLLED OPERATION OF A NSSC RECOVERY FURNACE.
12127 APTIC NO. 29621

LAW-MAKERS SAY: CLEAN UP OR SHUT DOWN.
12055 APTIC NO. 29628

ALKALI AND HEAT RECOVERY IN THE FLUE GASES FROM RECOVERY BOILERS.
12193 APTIC NO. 29852

PULPERS APPLY ODOR CONTROL.
12104 APTIC NO. 30062

ON MEASUREMENT OF ODOR.
12256 APTIC NO. 29726

AUTOMATED ANALYSIS SYSTEMS MAKES KRAFT EMISSION MEASUREMENTS EASY.
12325 APTIC NO. 29913

L

LABORATORY ANIMALS

AIRBORNE INFLUENZA PR8-A VIRUS INFECTIONS IN ACTIVELY IMMUNIZED MICE.
12167 APTIC NO. 29718

PATHOLOGICAL STUDY ON THE EXPERIMENTAL RABBITS AT AIR-POLLUTED AREA IN YOKKAICHI.
12590 APTIC NO. 29502

STUDIES OF THE SIGNIFICANCE OF DUSTS AND GASES FOR THE PATHOLOGY OF INFECTIONS OF THE RESPIRATORY TRACT.
12529 APTIC NO. 29571

ON THE PROBLEM OF THE COMBINED EFFECTS OF SULFUR DIOXIDE AND BENZPYRENE ON THE ORGANISMS OF TEST ANIMALS.
12583 APTIC NO. 29585

ON HYGIENIC AND TOXICOLOGICAL PROBLEMS OF POLLUTION BY ARSENIC.
12534 APTIC NO. 29587

EXPERIMENTAL STUDIES ON THE EFFECT OF SMALL DOSES OF LEAD AND SULFUR DIOXIDE.
12532 APTIC NO. 29588

HISTOPATHOLOGIC FINDINGS IN RATS EXPOSED TO AMBIENT AND FILTERED AIR.
12550 APTIC NO. 29715

EFFECT OF LONG-TERM JOINT ACTION OF CARBON MONOXIDE, NITROGEN DIOXIDE AND AMMONIUM ON REQUIREMENTS OF ALBINO RATS IN VITAMIN B6.
12572 APTIC NO. 29753

PULMONARY CHANGES IN 7000 MICE FOLLOWING PROLONGED EXPOSURE TO AMBIENT AND FILTERED LOS ANGELES AIR.
12551 APTIC NO. 29763

CATECHOLAMINE-INDEPENDENT GLYCOGENOLYSIS IN BRAIN DURING CARBON MONOXIDE POISONING.
12545 APTIC NO. 29835

EXPERIMENTAL STUDIES ON THE HEALTH EFFECTS OF AUTO EXHAUST GAS IN LOW CONCENTRATIONS. (REPORT I) PRELIMINARY EXPERIMENT.
12589 APTIC NO. 29921

THE ROLE OF TRACE METALS IN CHEMICAL CARCINOGENESIS: ASBESTOS CANCERS.
12543 APTIC NO. 29993

LABORATORY FACILITIES

EXPERIMENTAL STUDY ON PLASTICS INCINERATION.
12017 APTIC NO. 29841

EXPERIMENTAL RESEARCH ON LOW EXCESS AIR COMBUSTION IN BOILER BURNING HEAVY OIL ONLY.
12142 APTIC NO. 29860

ELECTROSTATIC FIELD BREAKDOWN PHENOMENA IN APPLYING CHARGED PARTICLES.
12236 APTIC NO. 30006

RESEARCH FACILITIES NECESSARY TO ADEQUATELY SUPPORT MEASUREMENT OF LOW LEVELS OF POLLUTANTS AND FOLLOW THEIR TRENDS.
12359 APTIC NO. 29050

A SUGGESTED OUTLINE FOR PROVIDING INFORMATION ON FACILITIES EXISTING IN COUNTRIES AT PILOT STATION.
12360 APTIC NO. 29055

COLLECTION EFFICIENCY OF WATER DROPLETS IN AGCL AEROSOL.
12430 APTIC NO. 29687

SCAVENGING OF AEROSOL PARTICLES BY SPRAYS.
12437 APTIC NO. 29711

THERMAL-DIFFUSION CHAMBERS AS CLOUD-NUCLEI COUNTERS.
12452 APTIC NO. 29714

ATMOSPHERIC DISPERSION OF STACK EFFLUENTS.
12458 APTIC NO. 29773

ESTIMATION OF GROUND LEVEL CONCENTRATION BY SMOKE-DIFFUSION WIND TUNNELS.
12462 APTIC NO. 29820

DISSOCIATIVE ELECTRON ATTACHMENT PROCESSES IN SO2 AND NO2.
12444 APTIC NO. 30008

LAKES

TRACE ELEMENTS IN ATMOSPHERIC PRECIPITATION AROUND THE OTKAZNOE RESERVOIR.
12432 APTIC NO. 29910

LANDFILLS

LEAD SMELTING PLANT CONTROLS AIR EMISSIONS.
12069 APTIC NO. 30124

LAPSE CONDITION

DISTRIBUTION OF POLLUTION AT SOME COUNTRY SITES.
12425 APTIC NO. 29582

LASERS

PARTICLE SIZE DISTRIBUTION IN AEROSOLS FORMED FROM GASEOUS REACTANTS.
12268 APTIC NO. 29854

SMOKE PLUMES MONITORED DAY AND NIGHT. PRACTICAL EXPERIENCE WITH A TV-LASER PLANT IN DUISBURG.
12247 APTIC NO. 30013

RAYLEIGH SCATTERING OF RUBY-LASER LIGHT BY NEUTRAL GASES.
12450 APTIC NO. 28884

SOME RESULTS OF LIDAR PROBING OF THE TROPOSHERE.
12434 APTIC NO. 30105

LASER-INDUCED VIBRATIONAL FLUORESCENCE IN NITROUS OXIDE.
12472 APTIC NO. 28910

ATMOSPHERIC POLLUTANTS FRENCH LEGISLATION. STANDARD MEASURING METHODS. RECENT COMMERCIAL APPARATUS.
12638 APTIC NO. 29003

LEAD

BAGHOUSE OPERATION AT THE WHITING, INDIANA PLANT OF THE FEDERATED METALS DIVISION AMERICAN SMELTING AND REFINING COMPANY.
12107 APTIC NO. 29772

LEAD SMELTING PLANT CONTROLS AIR EMISSIONS.
12069 APTIC NO. 30124

METAL COMPONENTS OF FLOATING DUST.
12286 APTIC NO. 29464

LEAD COMPOUNDS

OIL REFINERS PREPARE FOR ANIT-POLLUTION CONTROLS.
12040 APTIC NO. 29127

THE EXHAUST GAS COMPOSITION AT THE FM GASOLINE ENGINE.
12046 APTIC NO. 29516

HEAVY METAL POLLUTION IN THE ONAHAMA INDUSTRIAL AREA. 1ST REPORT. DISTRIBUTION OF HEAVY METALS IN SOIL.
12006 APTIC NO. 29539

AIR POLLUTION BY LEAD AND ZINC IN THE AREA OF COMBINED METAL-

LURGICA WORKS AND ITS INFLUENCE ON VEGETATION AND SOIL.
12031 APTIC NO. 29572

DETERMINATION OF LEAD CONTENTS IN AUTOMOBILE EXHAUST GAS.
12013 APTIC NO. 29661

WHY LEAD IN GASOLINE? THE EFFECT OF LEAD CONTAINING ANTIKNOCK AGENTS FOR OTTO ENGINE FUELS.
11995 APTIC NO. 29782

PHYSICAL-CHEMICAL PROBLEMS OF AIR POLLUTION.
11996 APTIC NO. 29786

INVESTIGATION OF HEAVY METAL POLLUTION IN IWAKI CITY.
12007 APTIC NO. 29787

LEAD POLLUTION--A GROWING HAZARD TO PUBLIC HEALTH.
11999 APTIC NO. 29872

ON COMPOSITION AND LEAD CONTENT OF COMMERCIAL GASOLINE.
12048 APTIC NO. 29936

MARKET TENDENCIES FOR LEAD AND ZINC.
12003 APTIC NO. 30001

GASOLINE, LEAD AND AIR POLLUTION.
12014 APTIC NO. 30027

TAKING ANOTHER LOOK BEFORE WE TAKE THE LEAD OUT.
11997 APTIC NO. 30067

EMISSIONS FROM INTERNAL COMBUSTION ENGINE.
12225 APTIC NO. 29531

TRANSPORTATION EMISSIONS.
12175 APTIC NO. 29605

FUTURE OF GASOLINE WITH LEAD ANTIKNOCKS.
12243 APTIC NO. 29625

LAW-MAKERS SAY: CLEAN UP OR SHUT DOWN.
12055 APTIC NO. 29628

AN EXPERIMENT ON VALVE RECESSION BY NON-LEADED GASOLINE.
12222 APTIC NO. 29656

COLLECTION EFFICIENCIES OF GLASS FIBER FILTERS FOR EACH SIZE OF LEAD AEROSOLS.
12140 APTIC NO. 29664

UTILIZATION OF CATALYST IN AIR POLLUTION CONTROL (5).
12240 APTIC NO. 29898

MUFFLER FOR REMOVING PARTICULATE LEAD FROM EXHAUST GASES OF INTERNAL COMBUSTION ENGINES.
12168 APTIC NO. 29920

GASOLINE WITHOUT LEAD. TECHNICAL POSSIBILITIES FOR A NON-LEADED FUEL.
12084 APTIC NO. 30010

LEAD SMELTING PLANT CONTROLS AIR EMISSIONS.
12069 APTIC NO. 30124

PARTICLE SIZE MEASURING WITH THE TELEVISION MICROSCOPE QUANTIMET FOR SIZES MINUS 4 MICRONS.
12304 APTIC NO. 29512

JIS ANALYTICAL PROCESS FOR NITROGEN OXIDES IN WASTE GAS.
12355 APTIC NO. 29677

SIMPLIFIED TECHNIQUES IN AIR POLLUTION MEASUREMENT.
12289 APTIC NO. 29771

STUDIES ON LEAD CHROMATE OBTAINED FROM TETRAALKYL LEAD IN LEADED GASOLINE. I. X-RAY DIFFRACTION TESTS OF THE LEAD CHROMATE CRYSTALS.
12296 APTIC NO. 29810

A SIMPLE TECHNIQUE FOR MEASURING MEAN H2S CONCENTRATION.
12275 APTIC NO. 29844

FILTER METHOD FOR THE MEASUREMENT OF ATMOSPHERIC HYDROGEN SULFIDE.
12330 APTIC NO. 30004

PLANTS AND SOILS AS INDICATORS OF METALS IN THE AIR.
12281 APTIC NO. 30113

REPORT ON LEAD POLLUTION SURVEY.
12361 APTIC NO. 29465

STUDY OF THE SUSPENDED PARTICULATES AND LEAD CONCENTRATION IN THE AIR WITHIN THE CITY LIMITS OF MAGDEBURG.
12382 APTIC NO. 29515

AIR POLLUTION BY EXHAUST GAS II. DETERMINATION OF LEAD AND CARBON MONOXIDE INSIDE A GARAGE AND A REPAIR FACTORY IN TOKYO CITY.
12397 APTIC NO. 29576

LEAD POLLUTION AND PHOTOCHEMICAL SMOG IN TOKYO.
12376 APTIC NO. 29647

STATISTICAL ANALYSES OF AIR POLLUTION SAMPLING FREQUENCY IN AN EPIDEMIOLOGIC STUDY.
12378 APTIC NO. 29655

URBAN POLLUTION BY AUTOMOBILE EXHAUST GAS.
12387 APTIC NO. 29744

LEAD CONCENTRATION IN YOKOHAMA AIR.
12399 APTIC NO. 29814

DISTRIBUTION OF LEAD IN THE AIR NEAR CITY ROADS.
12388 APTIC NO. 29918

SEASONAL VARIATION OF THE CONCENTRATION OF HEAVY METALS IN SUSPENDED DUST ON THE MAIN STREETS.
12384 APTIC NO. 30025

SCAVENGING IN PERSPECTIVE.
12422 APTIC NO. 29688

INTERNATIONAL CONFERENCE ON CONDENSATION NUCLEI AND ICE-FORMING NUCLEI.
12454 APTIC NO. 29699

TRACE ELEMENTS IN ATMOSPHERIC PRECIPITATION AROUND THE OTKAZNOE RESERVOIR.
12432 APTIC NO. 29910

THE STUDY OF THE EVOLUTION OF ATOMIC SIZED PARTICLES IN THE AIR.
12436 APTIC NO. 29946

ON PLUMBIC POLLUTION OF MUNICIPAL ATMOSPHERE--BEHAVIORS OF PLUMBIC COMPOUND AS AEROSOL.
12431 APTIC NO. 30073

LEAD IN THE ENVIRONMENT.
12564 APTIC NO. 29493

EXPERIMENTAL STUDIES ON THE EFFECT OF SMALL DOSES OF LEAD AND SULFUR DIOXIDE.
12532 APTIC NO. 29588

SEMI-AUTOMATIC DETERMINATION OF LEAD IN WIDE BLOOD.
12565 APTIC NO. 29663

LEAD MEN HEADING TOWARD DESTRUCTION--SPREADING OMINOUS METAL POLLUTIONS.
12569 APTIC NO. 29789

SOME PLANS FOR FUTURE STUDIES FOR LOW LEVEL OF LEAD ON THE HUMAN BEING.
12553 APTIC NO. 29815

AIR POLLUTION BY TRACE METALS IN JAPAN.
12561 APTIC NO. 29816

FOUR-ALKYL LEAD AND ENVIRONMENTAL POLLUTION.
12588 APTIC NO. 29825

EFFECTS OF ATMOSPHERIC LEAD ON TRAFFIC POLICEMEN IN A MEDIUM SIZED CITY.
12566 APTIC NO. 29958

PROCEEDINGS OF THE 9TH CONFERENCE OF JAPAN ASSOCIATION OF INDUSTRIAL HEALTH.
12526 APTIC NO. 29963

ADDITION OF LEAD TO FUEL - HARMFUL OR DANGEROUS? (Bleizusaetze im Kraftstoff - harmlos oder gefaehrlich)? Text in German. VDI (Ver. Deut. Ingr.) Nachr. (Berlin), 25(9):6, 1971.
12527 APTIC NO. 30000

EFFECT OF AIR AND WATER POLLUTION ON AGRICULTURAL PRODUCTS BY CD, PB, ZN ATTRIBUTED TO MINE REFINERY IN ANNAKA CITY, GUNMA PREFECTURE.
12601 APTIC NO. 27489

RESEARCH ON THE LEAD INTOXICATION OF THE GALLINACEANS.
12597 APTIC NO. 30033

UNLEADED GASOLINE AND SMOG-FREE AUTOS--HOW AND WHY.
12644 APTIC NO. 30035

IT BEGAN WITH THE SMOG IN CALIFORNIA. CALIFORNIA TEST, EUROPEAN TEST--INTERNATIONAL REGULATIONS OF AUTOMOBILE EXHAUST GAS EMISSIONS.
12640 APTIC NO. 30069

EXPANSION AND STRENGTHENING OF AIR POLLUTION CONTROL COUNTERMEASURES.
12671 APTIC NO. 29495

TOKYO FIGHTS POLLUTION. AN URGENT APPEAL FOR REFORM.
12653 APTIC NO. 29888

LEAD PEROXIDE CANDLE

PROGRESS IN MEASUREMENT OF AIR POLLUTION.
12350 APTIC NO. 29748

SIMPLIFIED TECHNIQUES IN AIR POLLUTION MEASUREMENT.
12289 APTIC NO. 29771

STATISTICAL ANALYSES OF AIR POLLUTION SAMPLING FREQUENCY IN AN EPIDEMIOLOGIC STUDY.
12378 APTIC NO. 29655

A REPORT OF THE PERIODIC MEASUREMENT OF SOOT AND DUST, AND SULFUR OXIDES IN THE AIR AROUND THE HOSPITAL.
12381 APTIC NO. 29794

A STUDY OF AIR POLLUTION AROUND A SULPHURIC ACID PLANT.
12374 APTIC NO. 29883

ON AIR POLLUTION IN MIZUSHIMA AREA.
12390 APTIC NO. 29895

LEAVES

PLANTS AND POLLUTED AIR.
12230 APTIC NO. 30083

EFFECT OF AIR AND WATER POLLUTION ON AGRICULTURAL PRODUCTS BY CD, PB, ZN ATTRIBUTED TO MINE REFINERY IN ANNAKA CITY, GUNMA PREFECTURE.
12601 APTIC NO. 27489

AIR POLLUTION OXIDANTS - THEIR EFFECTS ON METABOLIC PROCESSES IN PLANTS.
12598 APTIC NO. 29524

ON DAMAGE TO PLANTS BY FLUORIDES IN EXHAUST GAS FROM TILE MANUFACTURING FACTORY.
12606 APTIC NO. 29597

METABOLIC EFFECTS OF ATMOSPHERIC FLUORIDES ON PLANTS.
12605 APTIC NO. 29616

ON COMPOSITE HARM TO PLANTS BY SULFUROUS ACID GAS AND OXIDANT.
12604 APTIC NO. 29671

STUDIES ON THE SMOKE DAMAGE OF TREES. (I) ON THE ACUTE DAMAGE SYMPTOMS BY THE SO2.
12607 APTIC NO. 29976

THE EFFECTS OF AIR POLLUTION ON VEGETATION.
12600 APTIC NO. 30003

LEGISLATION

VEHICLE EMISSIONS.
12027 APTIC NO. 29894

LAW-MAKERS SAY: CLEAN UP OR SHUT DOWN.
12055 APTIC NO. 29628

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

DUST COLLECTING SYSTEMS IN CEMENT WORKS.
12106 APTIC NO. 29831

CLEANER AIR IN LONDON.
12377 APTIC NO. 29912

POLLUTIONS AND TOKYO METROPOLITAN GOVERNMENT.
12365 APTIC NO. 29973

PROBLEMS OF AIR POLLUTION AND MEASURES TO COMBAT IT IN EL PASO, TEXAS.
12368 APTIC NO. 30094

AIR POLLUTION.
12575 APTIC NO. 29949

FAST WRITE-OFF AND OTHER TAX RELIEF.
12627 APTIC NO. 30128

ATMOSPHERIC POLLUTANTS FRENCH LEGISLATION. STANDARD MEASURING METHODS. RECENT COMMERCIAL APPARATUS.
12638 APTIC NO. 29003

HOW THE LAWS AND AGENCIES AFFECT YOU.
12641 APTIC NO. 29113

THE PREVENTION OF POLLUTION. PART II-POLLUTION AND THE LAW.
12658 APTIC NO. 29474

EXPANSION AND STRENGTHENING OF AIR POLLUTION CONTROL COUNTERMEASURES.
12671 APTIC NO. 29495

COLLECTION OF LEGISLATIONS RELATED WITH MITI CONCERNING POLLUTIONS.
12646 APTIC NO. 29504

NEW TREND IN POLLUTIONS COUNTERMEASURES IN THE 70 S.
12660 APTIC NO. 29507

ON THE BASIC LAW FOR ENVIRONMENTAL POLLUTION CONTROL, NOISE CONTROL LAW, WATER POLLUTION PREVENTION LAW, AND AIR POLLUTION PREVENTION LAW.
12670 APTIC NO. 29509

ADDENDUM TO ENVIRONMENTAL POLLUTIONS IN KAWASAKI CITY.
12647 APTIC NO. 29511

PRESENT SITUATION OF ADMINISTRATION CONCERNING POLLUTIONS.
12648 APTIC NO. 29598

CHIBA PREFECTURAL ORDINANCE ON POLLUTIONS CONTROL AND ENFORCEMENT REGULATION OF ORDINANCE.
12649 APTIC NO. 29679

POLLUTIONS PREVENTION PLAN FOR CHIBA AND ICHIHARA CITIES IN CHIBA PREFECTURE.
12650 APTIC NO. 29813

SOME RECENT TOPICS IN AIR POLLUTION AND HEALTH IN NEW YORK.
12668 APTIC NO. 29817

MATERIALS FOR REFERENCE ABOUT ENVIRONMENTAL POLLUTION CONTROL.
12651 APTIC NO. 29818

STATE AND INSPECTION OF PROTECTION OF ATMOSPHERE AND LEGAL REGULATIONS VALID TODAY.
12664 APTIC NO. 29828

FEDERALISM MAKES ENVIRONMENTAL PROTECTION DIFFICULT.
12654 APTIC NO. 29969

THE EVOLUTION OF AIR POLLUTION CONTROL LAWS.
12672 APTIC NO. 30020

LEGAL ASPECTS OF AIR POLLUTION IN BELGIUM AND OTHER NEIGHBORING COUNTRIES.
12659 APTIC NO. 30040

COMPARATIVE STUDY OF CERTAIN PROVISIONS IN MEMBER STATES FOR CONTROLLING AIR POLLUTION.
12656 APTIC NO. 30052

NOBODY BREATHES FRESH AIR. FACTS AND ARGUMENTS ABOUT AIR POLLUTION.
12677 APTIC NO. 29459

LIGHT RADIATION

NEW WAYS TO MORE POWER WITH LESS POLLUTION.
12166 APTIC NO. 29658

RECORDING DEVICE COMBINED WITH THERMAL PRECIPITATOR FOR MEASURING DUST CONTENT IN AIR.
12285 APTIC NO. 29540

TRIAL CONSTRUCTION OF NON-DISPERSION TYPE VISIBLE LIGHT GAS ANALYZE AND DETERMINATION OF NITROGEN DIOXIDE, CHLORINE, AND BROMINE.
12303 APTIC NO. 29762

ON THE MEASUREMENT AND ABSOLUTE CALIBRATION OF THE STRENGTH OF SOLAR RADIATION ENERGY.
12348 APTIC NO. 29863

A COMPREHENSIVE SAMPLING SYSTEM FOR STUDYING THE RELATION BETWEEN VISIBILITY, METEOROLOGICAL PARAMETERS AND ATMOSPHERIC POLLUTION.
12276 APTIC NO. 30082

LEAD POLLUTION AND PHOTOCHEMICAL SMOG IN TOKYO.
12376 APTIC NO. 29647

PHOTOCHEMICAL SMOG.
12418 APTIC NO. 29672

AN EXPERIMENTAL STUDY OF PHOTOCHEMICAL OXIDATION OF ORGANIC SUBSTANCES IN THE ATMOSPHERE.
12441 APTIC NO. 29681

INTERNATIONAL CONFERENCE ON CONDENSATION NUCLEI AND ICE-FORMING NUCLEI.
12454 APTIC NO. 29699

ATMOSPHERIC REACTIONS AND SCAVENGING PROCESSES.
12426 APTIC NO. 29774

FORMATION OF PARTICLES BY PHOTOLYSIS AND RADIOLYSIS.
12407 APTIC NO. 29809

RADIANCE AND POLARIZATION OF LIGHT REFLECTED FROM OPTICALLY THICK CLOUDS.
12429 APTIC NO. 29915

THE STUDY OF THE EVOLUTION OF ATOMIC SIZED PARTICLES IN THE AIR.
12436 APTIC NO. 29946

THE ULTRA-VIOLET PHOTOLYSIS OF OZONE IN THE PRESENCE OF WATER VAPOUR.
12435 APTIC NO. 30012

MECHANISM OF SINGLET MOLECULAR OXYGEN FORMATION FROM PHOTOLYSIS OF OZONE AT 2537 A.
12424 APTIC NO. 30110

THE ULTRA-VIOLET PHOTOLYSIS OF OZONE IN THE PRESENCE OF MOLECULAR OXYGEN.
12500 APTIC NO. 297

THE INFLUENCE OF AIR POLLUTION ON PUBLIC HEALTH.
12586 APTIC NO. 29589

OXIDATION STUDY ON ATMOSPHERIC AGING OF POLYMERS.
12622 APTIC NO. 29826

STANDARD FADING CLOTHES FOR OXIDANTS.
12619 APTIC NO. 29866

INDUSTRIAL EMISSIONS: AN ANALYSIS OF SOME KEY FACTORS.
12669 APTIC NO. 29469

LIGHT SCATTERING

MEASUREMENT OF GAS CONCENTRATION UTILIZING LIGHT SCATTERING BY PARTICULATES.
12352 APTIC NO. 29461

PARTICLE SIZE DISTRIBUTION IN AEROSOLS FORMED FROM GASEOUS REACTANTS.
12268 APTIC NO. 29854

RAYLEIGH SCATTERING OF RUBY-LASER LIGHT BY NEUTRAL GASES.
12450 APTIC NO. 28884

COLLECTION EFFICIENCY OF WATER DROPLETS IN AGCL AEROSOL.
12430 APTIC NO. 29687

A METHOD OF VERIFYING THE COEFFICIENTS A-SUB-N AND B-SUB-N OF THE MIE THEORY OF LIGHT SCATTERING BY NONABSORBING ISOTROPIC SPHERES.
12492 APTIC NO. 29488

DETERMINATION OF THE DISPERSION OF SCATTERING NEAR THE CRITICAL POINT USING THE SCATTERED LIGHT INDICATRIX.
12499 APTIC NO. 30051

LIME

PROBLEMS OF PUBLIC NUISANCE CAUSED BY BAD ODORS IN HYOGO PREFECTURE.
12029 APTIC NO. 29599

MITSUBISHI-RESEARCH DISC SCRUBBER.
12080 APTIC NO. 29536

LIMESTONE

BASIC RESEARCH ON SMOKE DESULFURIZATION BY LIME-METALS, 2ND REPORT - EFFECT OF METAL ADDITION ON CALCINATION OF LIME.
12153 APTIC NO. 29880

BASIC RESEARCH ON SMOKE DESULFURIZATION BY LIME-METALS, 1ST REPORT - DESULFURIZATION EFFECT BY ADDITION OF METAL.
12154 APTIC NO. 29478

STUDY ON MECHANISM OF REACTION WITH SULFUR DIOXIDE OF LIMESTONE POWDER BLOWN INTO COMBUSTION GAS.
12146 APTIC NO. 29479

PREVENTION OF AIR POLLUTION ON IRON FOUNDRY.
12178 APTIC NO. 29602

SMELTER POLLUTION CONTROL--FACTS AND PROBLEMS.
12076 APTIC NO. 29622

ELECTROSTATIC PRECIPITATORS FOR CEMENT AND LIME INDUSTRY.
12169 APTIC NO. 29735

STUDIES ON AIR POLLUTION CONTROL BY ADDITIVE INJECTION. PART II - PREVENTION OF CLOGGING AT HIGH TEMPERATURE HEATING SURFACE OF BOILER BY ADDING MG(OH)2 POWDER.
12075 APTIC NO. 29941

STUDY ON THE DESULFURIZATION OF FLUE GAS BY THE USE OF DRY LIME.
12198 APTIC NO. 29972

ANNUAL SURVEY ON CUPOLA FURNACES, SEQUENCE EIGHT.
12101 APTIC NO. 30101

REDUCING SO2 EMISSION FROM STATIONARY SOURCES.
12098 APTIC NO. 30102

STUDY ON DESULFURIZATION BY THE INJECTION OF LIMESTONE POWDER INTO FURNACE OF OIL FIRING BOILER (PART I).
12145 APTIC NO. 30131

PARTICLE SIZE MEASURING WITH THE TELEVISION MICROSCOPE QUANTIMET FOR SIZES MINUS 4 MICRONS.
12304 APTIC NO. 29512

INDUSTRIAL REACTION TO SULPHUR DIOXIDE CONTROL EQUIPMENT AND STANDARDS.
12637 APTIC NO. 29604

LIPIDS

INFLUENCE OF PROLONGED CARBON MONOXIDE EXPOSURE AND ALTITUDE HYPOXIA ON SERUM LIPIDS IN MAN.
12558 APTIC NO. 29529

LIQUIDS

HEAT EXTRACTION AIDS DEPOLLUTION OF GASES AND WATER IN CHEVROLET FOUNDRY.
12097 APTIC NO. 29523

EXHAUST GAS CLEANER FOR DIESEL ENGINES.
12221 APTIC NO. 29533

METHOD TO REMOVE HARMFUL SUBSTANCES FROM STACK GAS BY-PRODUCING AMMONIUM SULFATE AND OTHERS (XV) - ACTIVATION ENERGY OF ACTIVATED CARBON FOR SO2 ADSORPTION.
12161 APTIC NO. 29648

THE NEW DUPLEX IRON MELTING PLANT AT THE M. BUSCH KG IN WEHRSTAPEL.
12094 APTIC NO. 29861

INVESTIGATION OF HEAVY OIL DESULFURIZATION IN FIXED-BED CONTACT REACTORS.
12196 APTIC NO. 29931

RESISTANCE OF PHASES INVOLVED IN MASS TRANSFER DURING ABSORPTION OF A READILY SOLUBLE GAS IN A VENTURI SCRUBBER.
12188 APTIC NO. 29968

METHOD TO MANUFACTURE CATALYST FOR DESULFURIZATION BY HYDROGEN ADDITION OF LIQUID HYDROCARBON.
12234 APTIC NO. 29974

THE ANALYSIS OF MERCURY IN URINE, BLOOD, WATER, AND AIR.
12306 APTIC NO. 29652

DETERMINATION OF ORGANICALLY BOUND CARBON IN MOIST WASTE GASES.
12345 APTIC NO. 29839

FRACTIONATION OF OXYGEN ISOTOPES BETWEEN NO AND H20.
12297 APTIC NO. 30114

COLLECTION EFFICIENCY OF WATER DROPLETS IN AGCL AEROSOL.
12430 APTIC NO. 29687

SCAVENGING OF AEROSOL PARTICLES BY SPRAYS.
12437 APTIC NO. 29711

CONTINUOUS CHARGED CLOUD-PARTICLE SAMPLER.
12451 APTIC NO. 29712

THE ULTRA-VIOLET PHOTOLYSIS OF OZONE IN THE PRESENCE OF WATER VAPOUR.
12435 APTIC NO. 30012

DEPOSITION OF LIQUID OR SOLID DISPERSIONS FROM TURBULENT GAS STREAMS: A STOCHASTIC MODEL.
12494 APTIC NO. 29873

CHARGES ON DROPLETS PRODUCED BY ATOMIZATION OF SOLUTIONS.
12482 APTIC NO. 29919

EXPERIMENTAL FUNCTIONS OF INTEGRAL ABSORPTION IN H2O, AND CO2, N2O, CH4, CO, NO VAPOUR BANDS.
12502 APTIC NO. 29964

STANDARD STATES FOR THERMOCHEMICAL AND ACTIVATION PARAMETERS.
12491 APTIC NO. 30034

FURTHER STUDIES ON THE EFFECT OF SULPHUR DIOXIDE ON LICHENS AND BRYOPHYTES.
12599 APTIC NO. 29645

LIVER

PATHOLOGICAL STUDY ON THE EXPERIMENTAL RABBITS AT AIR-POLLUTED AREA IN YOKKAICHI.
12590 APTIC NO. 2959[illegible]

ON THE PROBLEM OF THE COMBINED EFFECTS OF SULFUR DIOXIDE AND BENZPYRENE ON THE ORGANISMS OF TEST ANIMALS.
12583 APTIC NO. 29585

ON HYGIENIC AND TOXICOLOGICAL PROBLEMS OF POLLUTION BY ARSENIC.
12534 APTIC NO. 29587

EXPERIMENTAL STUDIES ON THE EFFECT OF SMALL DOSES OF LEAD AND SULFUR DIOXIDE.
12532 APTIC NO. 29588

RESEARCH ON THE LEAD INTOXICATION OF THE GALLINACEANS.
12597 APTIC NO. 30033

LOCAL GOVERNMENTS

ON THE BASIC LAW FOR ENVIRONMENTAL POLLUTION CONTROL, NOISE CONTROL LAW, WATER POLLUTION PREVENTION LAW, AND AIR POLLUTION PREVENTION LAW.
12670 APTIC NO. 29509

LOFTING

ATMOSPHERIC DISPERSION OF STACK EFFLUENTS.
12458 APTIC NO. 29773

LONDON

CLEANER AIR IN LONDON.
12377 APTIC NO. 29912

AIR POLLUTION IN AN URBAN ENVIRONMENT.
12413 APTIC NO. 30045

SOME RECENT TOPICS IN AIR POLLUTION AND HEALTH IN LONDON.
12562 APTIC NO. 29882

NOBODY BREATHES FRESH AIR. FACTS AND ARGUMENTS ABOUT AIR POLLUTION.
12677 APTIC NO. 29459

LOOPING

ATMOSPHERIC DISPERSION OF STACK EFFLUENTS.
12458 APTIC NO. 29773

LOS ANGELES

PLANTS AND POLLUTED AIR.
12230 APTIC NO. 30083

ATMOSPHERIC REACTIONS AND SCAVENGING PROCESSES.
12426 APTIC NO. 29774

HISTOPATHOLOGIC FINDINGS IN RATS EXPOSED TO AMBIENT AND FILTERED AIR.
12550 APTIC NO. 29715

PULMONARY CHANGES IN 7000 MICE FOLLOWING PROLONGED EXPOSURE TO AMBIENT AND FILTERED LOS ANGELES AIR.
12551 APTIC NO. 29763

CARBON MONOXIDE AND SURVIVAL FROM MYOCARDIAL INFARCTION.
12541 APTIC NO. 30127

AIR POLLUTION--THE STATUS TODAY.
12681 APTIC NO. 29923

LOWER ATMOSPHERE

TESTS WITH A SAMPLING AND MEASUREMENT METHOD FOR ROUTINE DETERMINATION OF FLUORINE IN THE LOWER ATMOSPHERE.
12262 APTIC NO. 29887

ANALYSIS OF HC OF LOW GRADE IN ATMOSPHERE.
12391 APTIC NO. 29482

A STUDY ON THE ESTIMATION OF THE REGIONAL CENTRAL VALUE OF AIR POLLUTION FROM OBSERVED VALUES.
12383 APTIC NO. 29518

DISTRIBUTION OF LEAD IN THE AIR NEAR CITY ROADS.
12388 APTIC NO. 29918

STUDIES ON AIR POLLUTION DUE TO AUTOMOBILE EXHAUST. REPORT 15: AIR POLLUTION AT THE VICINITY OF BOOTHS IN MEISHIN HIGHWAY.
12389 APTIC NO. 30075

PARTICLE AND DEUTERIUM CONTENT IN SNOW.
12449 APTIC NO. 29775

TURBULENT DIFFUSION THEORY TAKING TURBULENT BOUNDARY LAYER INTO CONSIDERATION.
12463 APTIC NO. 29822

ATTACHMENT OF TRACE SUBSTANCES ON ATMOSPHERIC AEROSOLS.
12409 APTIC NO. 30046

SOME RESULTS OF LIDAR PROBING OF THE TROPOSHERE.
12434 APTIC NO. 30105

NEW TREND IN POLLUTIONS COUNTERMEASURES IN THE 70 S.
12660 APTIC NO. 29507

LUBRICANTS

STUDY ON AUTO EXHAUST.
12241 APTIC NO. 29909

LUNG CANCER

FLAME PHOTOMETRIC DETECTION OF VOLATILE SULPHUR COMPOUNDS IN SMOKE FROM VARIOUS TYPES OF CIGARETTES.
12283 APTIC NO. 29874

PULMONARY CHANGES IN 7000 MICE FOLLOWING PROLONGED EXPOSURE TO AMBIENT AND FILTERED LOS ANGELES AIR.
12551 APTIC NO. 29763

SOME RECENT TOPICS IN AIR POLLUTION AND HEALTH IN LONDON.
12562 APTIC NO. 29882

ATMOSPHERIC POLLUTIONS AND HEALTH.
12537 APTIC NO. 29971

THE ROLE OF TRACE METALS IN CHEMICAL CARCINOGENESIS: ASBESTOS CANCERS.
12543 APTIC NO. 29993

LUNG CLEARANCE

CIGARETTE SMOKING: OBJECTIVE EVIDENCE FOR LUNG DAMAGE IN TEEN-AGERS.
12342 APTIC NO. 30097

LUNGS

PULMONARY COMPLICATIONS OF ASBESTOS EXPOSURE.
12552 APTIC NO. 29221

PATHOLOGICAL STUDY ON THE EXPERIMENTAL RABBITS AT AIR-POLLUTED AREA IN YOKKAICHI.
12590 APTIC NO. 29502

STUDIES ON THE INFLUENCE OF AIR POLLUTION ON THE HEALTH OF THE PEOPLE AT BELOSLAV, DISTRICT OF VARNA, PEOPLE S REPUBLIC OF BULGARIA.
12557 APTIC NO. 29573

ON THE PROBLEM OF THE COMBINED EFFECTS OF SULFUR DIOXIDE AND BENZPYRENE ON THE ORGANISMS OF TEST ANIMALS.
12583 APTIC NO. 29585

EFFECTS OF LOW CARBON MONOXIDE CONCENTRATIONS IN MAN.
12533 APTIC NO. 29609

LEAD MEN HEADING TOWARD DESTRUCTION--SPREADING OMINOUS METAL POLLUTIONS.
12569 APTIC NO. 29789

M

MAGNESIUM COMPOUNDS

DUST COLLECTOR FOR ELECTRIC FURNACE MANUFACTURING FERROALLOY.
12123 APTIC NO. 29481

A NEW FILTER FOR SUSPENDED MATTER WITH HIGH COLLECTION EFFICIENCY AND LOW FLOW RESISTANCE.
12231 APTIC NO. 29578

REMOVAL OF CHLORINE FROM GASES.
12177 APTIC NO. 29802

STUDIES ON AIR POLLUTION CONTROL BY ADDITIVE INJECTION. PART II - PREVENTION OF CLOGGING AT HIGH TEMPERATURE HEATING SURFACE OF BOILER BY ADDING MG(OH)2 POWDER.
12075 APTIC NO. 29941

THE EFFECT OF CATALYST POISONS ON THE ACTIVITY OF CARBON MONOXIDE SHIFT CATALYSTS.
12212 APTIC NO. 29944

COMBUSTION OF WASTES CENTERING AROUND REMOVAL OF NOXIOUS GAS.
12077 APTIC NO. 29985

CONTROL OF POLLUTANT EMISSION AND SULPHURIC ACID CORROSION FROM COMBUSTION OF RESIDUAL FUEL OIL. PART I: LOW-PRESSURE HEATING BOILERS WITH MECHANICAL ATOMIZING BURNERS.
12164 APTIC NO. 30055

SULFURIC ACID, SO2 DEVELOPMENTS: REMOVING SO2 AND ACID MIST WITH VENTURI SCRUBBERS.
12209 APTIC NO. 30080

THE SCRUBBING OF TAIL GAS FROM SULFURIC ACID PLANTS.
12067 APTIC NO. 30096

REDUCING SO2 EMISSION FROM STATIONARY SOURCES.
12098 APTIC NO. 30102

STUDY ON DESULFURIZATION BY THE INJECTION OF LIMESTONE POWDER INTO FURNACE OF OIL FIRING BOILER (PART I).
12145 APTIC NO. 30131

PLANTS AND SOILS AS INDICATORS OF METALS IN THE AIR.
12281 APTIC NO. 30113

SOME ASPECTS OF THE METAL ION CHEMISTRY OF THE EARTH'S ATMOSPHERE.
12421 APTIC NO. 28891

BORDEAUX. STUDY OF ATMOSPHERIC POLLUTION IN THE BUILT-UP AREA.
12420 APTIC NO. 30109

REDUCTION OF MAGNESIUM SULPHATE BY CARBON MONOXIDE.
12498 APTIC NO. 29943

MAGNETOHYDRODYNAMICS (MHD

NEW WAYS TO MORE POWER WITH LESS POLLUTION.
12166 APTIC NO. 29658

KINETICS OF RECOVERING SULFUR FROM THE SPENT SEED IN AN MHD POWER PLANT.
12118 APTIC NO. 30048

MAINTENANCE

CONTROL OF OIL-FIRED HEATERS. A MODERN COMMUNAL TASK.
12015 APTIC NO. 30100

POLLUTION CONTROL SYSTEMS FOR ASPHALT PLANTS.
12233 APTIC NO. 29492

MITSUBISHI-RESEARCH WEDGE SCRUBBER.
12081 APTIC NO. 29537

PLAIN TALK FOR EQUIPMENT SELLERS--AND BUYERS.
12089 APTIC NO. 29618

PURIX WET COLLECTOR FOR WASTE GAS CLEANING.
12060 APTIC NO. 29767

INTERNAL COMBUSTION ENGINE EXHAUST SYSTEM.
12132 APTIC NO. 29836

REPORT ON THE INVESTIGATION INTO THE MAINTENANCE AND THE SUPERVISION OF AIR-CLEANING APPARATUS AS AN INDICATION OF AIR POLLUTION.
12122 APTIC NO. 29840

CONTROL OF ATMOSPHERIC EMISSIONS FROM PETROLEUM STORAGE TANKS.
12063 APTIC NO. 29889

CAN ADDITIVES DECREASE DIESEL SMOKE? Power, 114(8):60, Aug. 1970.
12122 APTIC NO. 29840

A STUDY OF AIR POLLUTION AROUND A SULPHURIC ACID PLANT.
12374 APTIC NO. 29883

EXPERIENCE WITH INDUSTRIAL MULTI-FLUE CHIMNEYS OF 100-200 IN HEIGHT.
12473 APTIC NO. 29890

ON EXAMPLE OF PRACTICAL APPLICATION OF DUST COLLECTOR FOR ELECTRIC FURNACE FOR FERRO-ALLOY.
12632 APTIC NO. 29892

MALES

PULMONARY COMPLICATIONS OF ASBESTOS EXPOSURE.
12552 APTIC NO. 29221

RAPID ASSESSMENT OF TESTS OF POLLUTANT EFFECTS IN MAN.
12536 APTIC NO. 29431

EFFECTS OF SOOT AND SMOKE ON THE HEALTH OF SCHOOL CHILDREN.
12556 APTIC NO. 29791

THE STUDY OF THE POLLUTED AIR INFLUENCE ON CHILDREN S HEALTH IN RUHRDISTRICT.
12544 APTIC NO. 29899

STUDY ON THE EFFECTS OF AIR POLLUTION ON HUMAN BODY--WITH SPECIAL REFERENCE TO OBJECTIVE, COMPARATIVE STUDY OF ALL THE INHABITANTS BY CHEST X-RAY RINDINGS.
12554 APTIC NO. 29904

SOME HEALTH SURVEY RESULTS OF UNDERGROUND GARAGE WORKERS.
12568 APTIC NO. 30074

CHANGES IN AIRWAYS CONDUCTANCE ON SMOKING A CIGARETTE.
12540 APTIC NO. 30135

MANGANESE

METAL COMPONENTS OF FLOATING DUST.
12286 APTIC NO. 29464

MANGANESE COMPOUNDS

COMPARISON OF THE CATALYTIC ACTIVITY OF MANGANESE DIOXIDE OF ELECTROLYTIC ORIGIN AND OF MANGANESE HYDROXIDE IN THE OXIDATION OF CARBON OXIDES. IV. ADSORPTION AND DESORPTION OF THE REAGENTS AND THE PRODUCTS OF THE REACTION ON MANGANESE HYDROXIDE.
12192 APTIC NO. 29506

DESULFURIZATION OF EXHAUST GAS.
12078 APTIC NO. 29927

GASOLINE WITHOUT LEAD. TECHNICAL POSSIBILITIES FOR A NON-LEADED FUEL.
12084 APTIC NO. 30010

ON A DUST-COLLECTING DEVICE FOR A FERROSILICON FURNACE.
12219 APTIC NO. 30086

INFRARED SPECTROSCOPIC STUDY OF THE CATALYTIC OXIDATION OF CARBON MONOXIDE TO CARBON DIOXIDE ON MANGANESE DIOXIDE.
12105 APTIC NO. 30091

OXIDATION OF NITROGEN MONOXIDE.
12320 APTIC NO. 29676

JIS ANALYTICAL PROCESS FOR NITROGEN OXIDES IN WASTE GAS.
12355 APTIC NO. 29677

THE GAS CHROMATOGRAPHIC DETERMINATION OF PESTICIDES. (PART 3) DETERMINATION OF RESIDUES OF ORGANOPHOSPHORUS PESTICIDES.
12349 APTIC NO. 30134

SEASONAL VARIATION OF THE CONCENTRATION OF HEAVY METALS IN SUSPENDED DUST ON THE MAIN STREETS.
12384 APTIC NO. 30025

TRACE ELEMENTS IN ATMOSPHERIC PRECIPITATION AROUND THE OTKAZNOE RESERVOIR.
12432 APTIC NO. 29910

EXPANSION AND STRENGTHENING OF AIR POLLUTION CONTROL COUNTERMEASURES.
12671 APTIC NO. 29495

MANGANESE DIOXIDE (JAPANE

OUTLOOK OF ENVIRONMENTAL POLLUTION AND ITS PREVENTION TECHNOLOGY.
12124 APTIC NO. 29600

DESULFURIZATION OF EXHAUST GAS.
12078 APTIC NO. 29927

REDUCING SO2 EMISSION FROM STATIONARY SOURCES.
12098 APTIC NO. 30102

MANGANESE SULFATES

DESULFURIZATION OF EXHAUST GAS.
12078 APTIC NO. 29927

MAPPING

RELATION BETWEEN INDUSTRIALIZATION AND THE DISTRIBUTION AND GROWTH OF EPIPHYTIC LICHENS AND MOSSES IN MONTREAL.
12602 APTIC NO. 29998

MARYLAND

A PROGRAM TO SAMPLE AND ANALYZE AIR POLLUTION IN THE VICINITY OF A CHEMICAL RECLAMATION PLANT.
12039 APTIC NO. 29698

MEASUREMENT OF ATMOSPHERIC LEVELS OF PESTICIDES.
12392 APTIC NO. 29812

MASS SPECTROMETRY

QUALITATIVE ANALYSIS OF EXHAUST GAS FROM FISH MEAL PLANT.
12028 APTIC NO. 29662

INSTRUMENTS AND THEIR APPLICATIONS IN MASS SPECTROMETRY.
12261 APTIC NO. 29579

GC-MS ANALYSIS OF THE SEMIVOLATILES OF CIGARETTE SMOKE.
12282 APTIC NO. 29660

ENVIRONMENTAL POLLUTION AND ITS MEASUREMENTS (II).
12338 APTIC NO. 29843

DETERMINATION OF AROMATIC HYDROCARBONS EMITTED FROM THE DRY BATTERY PLANT.
12287 APTIC NO. 29862

MASS TRANSPORTATION

EXPERIMENTS WITH ELECTRIC VEHICLES.
11989 APTIC NO. 29886

MATERIALS DETERIORATION

CONSIDERATIONS IN THE CONSTRUCTION OF LARGE REFUSE INCINERATORS.
12026 APTIC NO. 29547

EXPERIMENTS CONCERNING STOICHIOMETRIC COMBUSTION IN OIL-FIRED FURNACES OF FRENCH POWER PLANTS.
12090 APTIC NO. 29513

AN EXPERIMENT ON VALVE RECESSION BY NON-LEADED GASOLINE.
12222 APTIC NO. 29656

MODERN OIL BURNING TECHNOLOGY AS DISPLAYED ON THE INTHERM IN STUTTGART AND THE 6.ISH IN FRANKFURT 1971.
12187 APTIC NO. 29824

ACID MIST PRECIPITATOR MADE OF TEFLON FIBER.
12061 APTIC NO. 29833

SELECTION OF FILTRATION EQUIPMENT FOR SULPHUR AND POTASH PROCESSING.
12160 APTIC NO. 29902

CONTROL OF POLLUTANT EMISSION AND SULPHURIC ACID CORROSION FROM COMBUSTION OF RESIDUAL FUEL OIL. PART I: LOW-PRESSURE HEATING BOILERS WITH MECHANICAL ATOMIZING BURNERS.
12164 APTIC NO. 30055

PROGRESS IN MEASUREMENT OF AIR POLLUTION.
12350 APTIC NO. 29748

SIMPLIFIED TECHNIQUES IN AIR POLLUTION MEASUREMENT.
12289 APTIC NO. 29771

A SIMPLE TECHNIQUE FOR MEASURING MEAN H2S CONCENTRATION.
12275 APTIC NO. 29844

DEVELOPMENT OF A METHOD FOR DETERMINING SULPHUR OXIDES IN FLUE GASES.
12265 APTIC NO. 30084

AIR POLLUTION.
12363 APTIC NO. 29510

ATMOSPHERIC REACTIONS AND SCAVENGING PROCESSES.
12426 APTIC NO. 29774

PHOTOCHEMICAL SMOG AND ITS REACTION MECHANISM.
12459 APTIC NO. 29934

CORROSION RATES OF MILD STEEL IN COASTAL, INDUSTRIAL, AND INLAND AREAS OF NORTHERN CALIFORNIA.
12620 APTIC NO. 28810

AIR POLLUTION AND ATMOSPHERIC CORROSION.
12613 APTIC NO. 29222

DEGRADATION OF POLYMERS IN REACTIVE GASES.
12617 APTIC NO. 29472

THE MECHANISM OF ATMOSPHERIC RUSTING AND THE EFFECT OF CU AND P ON THE RUST FORMATION OF LOW ALLOY STEELS.
12615 APTIC NO. 29631

THE INFLUENCE OF AIR POLLUTION UPON THE DISCOLORATION OF THE DYED STUFF AND THE DECREASE OF TENSILE STRENGTH OF SOME FIBERS.
12612 APTIC NO. 29717

COMPLEX ALKALI IRON SULFATES A CONTRIBUTION TO THE THERMODYNAMICS OF FIRESDIDE HIGH-TEMPERATURE CORROSION.
12616 APTIC NO. 29783

OXIDATION STUDY ON ATMOSPHERIC AGING OF POLYMERS.
12622 APTIC NO. 29826

USING TITANIUM IN THE CHEMICAL PLANT.
12610 APTIC NO. 29857

STANDARD FADING CLOTHES FOR OXIDANTS.
12619 APTIC NO. 29866

ALUMINUM MATERIAL FOR THE CHEMICAL INDUSTRY.
12624 APTIC NO. 29922

ATMOSPHERIC CORROSION OF SILVER.
12614 APTIC NO. 29951

PROBLEMS IN INDUSTRIAL POWER PLANTS.
12618 APTIC NO. 29956

EFFECT OF LOW SILICIUM CONTENT AND SOME SURFACE TREATMENT ON THE OXIDATION OF CARBON STEELS IN CARBON DIOXIDE ATMOSPHERES AT MEDIUM TEMPERATURES.
12611 APTIC NO. 29995

A STUDY OF THE CONVERSION OF SO2 TO SO3.
12623 APTIC NO. 30022

ATMOSPHERIC CORROSION OF THE ELECTROLYTIC NI-CR COATINGS.
12609 APTIC NO. 30039

CORROSION OF NACL-CONTAMINATED FE IN HUMID ATMOSPHERE OF LOW O2 CONTENT.
12621 APTIC NO. 30112

MATHEMATICAL ANALYSES

NOMOGRAPH GIVES NO OXIDATION.
11993 APTIC NO. 27535

THE CALCULATION OF MIXED HYDROCARBON-OXYGENATED SOLVENT EVAPORATION.
12038 APTIC NO. 29526

STUDY OF THE COMBUSTION OF PARTLY PRE-MIXED LAMINAR NATURAL GAS FLAMES.
12021 APTIC NO. 29948

JET AIRCRAFT AIR POLLUTANT PRODUCTION AND DISPERSION.
12016 APTIC NO. 30130

PARTICLE CAPTURE MECHANISMS IN FIBROUS FILTERS.
12214 APTIC NO. 29324

DESIGN OF AN ELECTROSTATIC PRECIPITATOR USING MODELLING AND SIMULATION TECHNIQUES.
12223 APTIC NO. 29639

FILTRATION OF MULTI-DISPERSING AEROSOL UNDER THE FORCE OF GRAVITY.
12115 APTIC NO. 29730

CALCULATION OF EXCESS AIR FOR COMBUSTION PROCESSES USING O2-TO-N2 RATIO.
12176 APTIC NO. 29796

CONTROL OF ATMOSPHERIC EMISSIONS FROM PETROLEUM STORAGE TANKS.
12063 APTIC NO. 29889

INVESTIGATION OF HEAVY OIL DESULFURIZATION IN FIXED-BED CONTACT REACTORS.
12196 APTIC NO. 29931

HIGH-CONCENTRATION SULFUR DIOXIDE FROM CALCINING PYRITES IN THE DKSM FURNACE.
12157 APTIC NO. 29982

THE PROBLEM OF INDUSTRIAL DUST: WAYS TO REGULATE ITS COLLECTION.
12099 APTIC NO. 29990

ON DOUBLE HEAD-CUT CONES TYPE CENTRIFUGAL DUST COLLECTOR.
12148 APTIC NO. 30070

STUDY ON THE STRENGTH OF SUPERHIGH ASSEMBLED MULTI-CYLINDER TYPE STACK.
12184 APTIC NO. 30093

GRAVITATIONAL AND DRY CENTRIFUGAL COLLECTORS AND AIR POLLUTION CONTROL.
12095 APTIC NO. 30123

EXPERIMENTAL INVESTIGATION OF THE PROCESS OF CENTRIFUGAL DUST SEPARATION.
12245 APTIC NO. 30133

THEORETICAL CONSIDERATION IN THE MEASUREMENT OF SMOKE PARTICLES BY OWL (II) - EFFECT OF DISPERSION.
12298 APTIC NO. 29483

INFRARED RADIATION PROPERTIES OF SULFUR DIOXIDE.
12269 APTIC NO. 29521

EXHAUST GAS EVALUATION BY AIR RATIO COEFFICIENTS.
12278 APTIC NO. 29638

POLLUTION TESTS ON IDLING GASOLINE MOTORS.
12251 APTIC NO. 29765

A MATHEMATICAL MODEL FOR MEASURING MASS/NUMBER INDEX OF RESPIRABLE AIRBORNE COAL DUST.
12258 APTIC NO. 30081

CALCULATION METHODS OF SPECTRAL ABSORPTION OF INFRARED RADIATION BY ATMOSPHERIC GASES.
12323 APTIC NO. 30103

A STUDY OF AIR POLLUTION AROUND A SULPHURIC ACID PLANT.
12374 APTIC NO. 29883

ON THE DEPOSITION OF MATTER ON SPHERICAL AEROSOL PARTICLES IN THE RANGE OF INTERMEDIATE KNUDSEN NUMBERS.
12405 APTIC NO. 29667

PRIORITIES IN SCAVENGING RESEARCH.
12419 APTIC NO. 29689

EVALUATION TRIALS OF URBAN AIR POLLUTION MODELS.
12439 APTIC NO. 29697

COLLECTION EFFICIENCY IN WASHOUT BY RAIN.
12406 APTIC NO. 29710

SCAVENGING OF AEROSOL PARTICLES BY SPRAYS.
12437 APTIC NO. 29711

ATMOSPHERIC DISPERSION OF STACK EFFLUENTS.
12458 APTIC NO. 29773

ATMOSPHERIC REACTIONS AND SCAVENGING PROCESSES.
12426 APTIC NO. 29774

EFFECT OF SOLUBILITIES OF GASES ON THEIR SCAVENGING BY RAINDROPS.
12442 APTIC NO. 29780

THE EFFECT OF ATMOSPHERIC CONDITIONS ON PLUME RISE.
12455 APTIC NO. 29865

EFFECT OF THE TEMPERATURE DEPENDENCE OF OZONE ABSORPTION ON VERTICAL OZONE DISTRIBUTIONS DEDUCED FROM UMKEHR OBSERVATIONS.
12415 APTIC NO. 29875

A METHOD FOR OPTIMIZING POLLUTANT EMISSIONS IN AN AIRSHED.
12448 APTIC NO. 29903

RADIANCE AND POLARIZATION OF LIGHT REFLECTED FROM OPTICALLY THICK CLOUDS.
12429 APTIC NO. 29915

A NUMERICAL EXPERIMENT IN SIMULATING THE TRANSPORT OF SULFUR DIOXIDE THROUGH THE ATMOSPHERE.
12446 APTIC NO. 29952

ATTACHMENT OF TRACE SUBSTANCES ON ATMOSPHERIC AEROSOLS.
12409 APTIC NO. 30046

PLUME RISE: A RECENT CRITICAL REVIEW.
12408 APTIC NO. 30068

EXPERIMENTS WITH A REGIONAL FINE-MESH PREDICTION MODEL.
12465 APTIC NO. 30107

MOLECULAR ORBITAL STUDY OF NH2, NO2, AND NF2.
ERROR

A METHOD OF VERIFYING THE COEFFICIENTS A-SUB-N AND B-SUB-N OF THE MIE THEORY OF LIGHT SCATTERING BY NONABSORBING ISOTROPIC SPHERES.
12492 APTIC NO. 29488

SCALE-UP OF LABORATORY FLUID-BED DATA: THE SIGNIFICANCE OF SLUG FLOW.
12501 APTIC NO. 29494

CALCULATIONS OF THE GROUND AND EXCITED STATE ENERGIES OF NO2.
12489 APTIC NO. 29530

THERMAL AND DIFFUSIONAL EFFECTS IN NONCATALYTIC SOLID GAS REACTIONS.
12522 APTIC NO. 29612

THE SCATTERING OF THERMAL ELECTRONS BY CARBON MONOXIDE.
12484 APTIC NO. 29654

KINETICS OF THE REACTION BETWEEN THE SOLID SODIUM CARBONATE AND THE GASEOUS SULPHUR DIOXIDE. VI. STATISTICAL MOLECULAR MODEL OF THE EXCESS KINETIC FUNCTION.
12487 APTIC NO. 29702

RATES OF ENERGY TRANSFER FROM N2 A CUBED SIGMA(+) U TO VARIOUS MOLECULES. INITIAL AND FINAL QUANTUM STATES IN THE TRANSFER TO NOX SQUARED PI AND HG(6 1S SUB O), AND VIBRATIONAL RELAXATION OF N2 A CUBED SIGMA(+) U (V EQUALS 1) IN HELIUM.
12481 APTIC NO. 29750

THE ADSORPTION OF CARBON MONOXIDE ON CU(001) LEED AND AUGER EMISSION STUDIES.
12496 APTIC NO. 29799

METHOD OF CALCULATING EQUILIBRIUM COMPOSITIONS IN INTERACTION OF NITROGEN OXIDES WITH NITRIC ACID SOLUTIONS.
12470 APTIC NO. 29800

PROGRESS REVIEW NO. 62: COMBUSTION OF SINGLE DROPLETS AND SIMPLIFIED SPRAY SYSTEMS.
12493 APTIC NO. 29803

DEPOSITION OF LIQUID OR SOLID DISPERSIONS FROM TURBULENT GAS STREAMS: A STOCHASTIC MODEL.
12494 APTIC NO. 29873

CHARGES ON DROPLETS PRODUCED BY ATOMIZATION OF SOLUTIONS.
12482 APTIC NO. 29919

THE ABSORPTION COEFFICIENT OF A GASEOUS SUBSTANCE ON A SWARMING FILM.
12479 APTIC NO. 29994

CALCULATION OF A JET AXIS IN A DRIFTING FLOW.
12507 APTIC NO. 30042

DETERMINATION OF THE DISPERSION OF SCATTERING NEAR THE CRITICAL POINT USING THE SCATTERED LIGHT INDICATRIX.
12499 APTIC NO. 30051

APPROXIMATE SOLUTION OF THE EQUATIONS FOR AEROSOL AGGLOMERATION.
12483 APTIC NO. 30111

SIGNAL PROCESSING TECHNIQUES FOR ESTIMATING PARAMETERS OF CERTAIN BIOLOGICAL MODELS.
12570 APTIC NO. 29997

AIR POLLUTION AND ATMOSPHERIC CORROSION.
12613 APTIC NO. 29222

CORROSION OF NACL-CONTAMINATED FE IN HUMID ATMOSPHERE OF LOW O2 CONTENT.
12621 APTIC NO. 30112

STANDARDS OF AIR POLLUTION.
12643 APTIC NO. 29776

LONG RANGE PLANNING IN AIR RESOURCE MANAGEMENT.
12657 APTIC NO. 30056

MATHEMATICAL MODELING

JET AIRCRAFT AIR POLLUTANT PRODUCTION AND DISPERSION.
12016 APTIC NO. 30130

PARTICLE CAPTURE MECHANISMS IN FIBROUS FILTERS.
12214 APTIC NO. 29324

DESIGN OF AN ELECTROSTATIC PRECIPITATOR USING MODELLING AND SIMULATION TECHNIQUES.
12223 APTIC NO. 29639

ON DOUBLE HEAD-CUT CONES TYPE CENTRIFUGAL DUST COLLECTOR.
12148 APTIC NO. 30070

STUDY ON THE STRENGTH OF SUPER-HIGH ASSEMBLED MULTI-CYLINDER TYPE STACK.
12184 APTIC NO. 30093

INFRARED RADIATION PROPERTIES OF SULFUR DIOXIDE.
12269 APTIC NO. 29521

A MATHEMATICAL MODEL FOR MEASURING MASS/NUMBER INDEX OF RESPIRABLE AIRBORNE COAL DUST.
12258 APTIC NO. 30081

CALCULATION METHODS OF SPECTRAL ABSORPTION OF INFRARED RADIATION BY ATMOSPHERIC GASES.
12323 APTIC NO. 30103

A STUDY OF AIR POLLUTION AROUND A SULPHURIC ACID PLANT.
12374 APTIC NO. 29[illegible]

ON THE DEPOSITION OF MATTER ON SPHERICAL AEROSOL PARTICLES IN THE RANGE OF INTERMEDIATE KNUDSEN NUMBERS.
12405 APTIC NO. 29667

PRIORITIES IN SCAVENGING RESEARCH.
12419 APTIC NO. 29689

EVALUATION TRIALS OF URBAN AIR POLLUTION MODELS.
12439 APTIC NO. 29697

SCAVENGING OF AEROSOL PARTICLES BY SPRAYS.
12437 APTIC NO. 29711

ATMOSPHERIC DISPERSION OF STACK EFFLUENTS.
12458 APTIC NO. 29773

EFFECT OF THE TEMPERATURE DEPENDENCE OF OZONE ABSORPTION ON VERTICAL OZONE DISTRIBUTIONS DEDUCED FROM UMKEHR OBSERVATIONS.
12415 APTIC NO. 29875

A METHOD FOR OPTIMIZING POLLUTANT EMISSIONS IN AN AIRSHED.
12448 APTIC NO. 29903

A NUMERICAL EXPERIMENT IN SIMULATING THE TRANSPORT OF SULFUR DIOXIDE THROUGH THE ATMOSPHERE.
12446 APTIC NO. 29952

PLUME RISE: A RECENT CRITICAL REVIEW.
12408 APTIC NO. 30068

EXPERIMENTS WITH A REGIONAL FINE-MESH PREDICTION MODEL.
12465 APTIC NO. 30107

SCALE-UP OF LABORATORY FLUID-BED DATA: THE SIGNIFICANCE OF SLUG FLOW.
12501 APTIC NO. 29494

THERMAL AND DIFFUSIONAL EFFECTS IN NONCATALYTIC SOLID GAS REACTIONS.
12522 APTIC NO. 29612

KINETICS OF THE REACTION BETWEEN THE SOLID SODIUM CARBONATE AND THE GASEOUS SULPHUR DIOXIDE. VI. STATISTICAL MOLECULAR MODEL OF THE EXCESS KINETIC FUNCTION.
12487 APTIC NO. 29702

RATES OF ENERGY TRANSFER FROM N2 A CUBED SIGMA(+) U TO VARIOUS MOLECULES. INITIAL AND FINAL QUANTUM STATES IN THE TRANSFER TO NOX SQUARED PI AND NG66 IS SUB O), AND VIBRATIONAL RELAXATION OF N2 A CUBED SIGMA(+) U (V EQUALS 1) IN HELIUM.
12481 APTIC NO. 29750

THE ADSORPTION OF CARBON MONOXIDE ON CU(001) LEED AND AUGER EMISSION STUDIES.
12496 APTIC NO. 29799

DEPOSITION OF LIQUID OR SOLID DISPERSIONS FROM TURBULENT GAS STREAMS: A STOCHASTIC MODEL.
12494 APTIC NO. 29873

SIGNAL PROCESSING TECHNIQUES FOR ESTIMATING PARAMETERS OF CERTAIN BIOLOGICAL MODELS.
12570 APTIC NO. 29997

STANDARDS OF AIR POLLUTION.
12643 APTIC NO. 29776

LONG RANGE PLANNING IN AIR RESOURCE MANAGEMENT.
12657 APTIC NO. 30056

MAXIMUM ALLOWABLE CONCENT

THE INDUSTRIAL FIRING SYSTEMS OF THE 1970'S.
12025 APTIC NO. 28968

MERCURY IN THE ENVIRONMENT.
11992 APTIC NO. 29489

THE EXHAUST GAS COMPOSITION AT THE FM GASOLINE ENGINE.
12046 APTIC NO. 29516

CONSIDERATIONS IN THE CONSTRUCTION OF LARGE REFUSE INCINERATORS.
12026 APTIC NO. 29547

NITROGEN DIOXIDE.
11988 APTIC NO. 29567

MERCURY IN MAN.
12011 APTIC NO. 29643

SOME PLANS FOR FUTURE STUDIES FOR LOW LEVEL OF LEAD ON THE HUMAN BEING.
12553 APTIC NO. 29815

RECENT RESEARCH INTO THE EFFECT OF LOW LEVEL CARBON MONOXIDE EXPOSURE ON PSYCHOMOTOR PERFORMANCE IN HEALTHY HUMANS.
12574 APTIC NO. 29846

ADDITION OF LEAD TO FUEL - HARMFUL OR DANGEROUS? (Bleizusaetze im Kraftstoff - harmlos oder gefaehrlich)? Text in German. VDI (Ver. Deut. Ingr.) Nachr. (Berlin), 25(9):6, 1971.
12527 APTIC NO. 30080

THE EFFECTS OF LOW LEVEL FLUORINE POLLUTION IN A MOUNTAIN VALLEY.
12595 APTIC NO. 29991

ATMOSPHERIC POLLUTANTS FRENCH LEGISLATION. STANDARD MEASURING METHODS. RECENT COMMERCIAL APPARATUS.
12638 APTIC NO. 29883

COMPARATIVE STUDY OF PERMISSIBLE LIMITS OF AIR DUSTINESS IN VARIOUS COUNTRIES.
12639 APTIC NO. 29543

CRITERIA OF INJURIOUSNESS AS THE BASIS OF STANDARDS OF THE HYGIENE OF THE AIR.
12642 APTIC NO. 29574

EXPANSION AND STRENGTHENING OF AIR POLLUTION CONTROL COUNTERMEASURES.
12671 APTIC NO. 29495

COLLECTION OF LEGISLATIONS RELATED WITH MITI CONCERNING POLLUTIONS.
12646 APTIC NO. 29504

THE TASKS OF THE PUBLIC HEALTH SYSTEM IN THE FIELD OF THE HYGIENE OF THE AIR IN THE PEOPLE S REPUBLIC OF HUNGARY.
12667 APTIC NO. 29392

THE TASKS OF THE PUBLIC HYGIENE SYSTEM OF THE USSR IN THE FIELD OF THE PURIFICATION OF THE AIR.
12665 APTIC NO. 29394

MEETINGS

INTERNATIONAL CONFERENCE ON CONDENSATION NUCLEI AND ICE-FORMING NUCLEI.
12454 APTIC NO. 29699

PROCEEDINGS OF THE 9TH CONFERENCE OF JAPAN ASSOCIATION OF INDUSTRIAL HEALTH.
12526 APTIC NO. 29963

INTERNATIONAL SYMPOSIUM ON THE HYGIENE OF THE AIR OF THE MEMBER COUNTRIES OF THE COUNCIL FOR MUTUAL ECONOMIC AID.
12679 APTIC NO. 29393

MEMBRANE FILTERS

EFFICIENCY OF FILTERS FOR RADIOACTIVE AEROSOL.
12155 APTIC NO. 29768

POROUS ANALYTICAL FILTERS AND THEIR USE IN AIR HYGIENE.

12346 APTIC NO. 29784

FILTER METHOD FOR THE MEASUREMENT OF ATMOSPHERIC HYDROGEN SULFIDE.

12330 APTIC NO. 30004

MERCAPTANS

PROBLEMS OF PUBLIC NUISANCE CAUSED BY BAD ODORS IN HYOGO PREFECTURE.

12029 APTIC NO. 29599

QUALITATIVE ANALYSIS OF EXHAUST GAS FROM FISH MEAL PLANT.

12028 APTIC NO. 29662

SOME PROBLEMS ON THE OFFENSIVE ODOR IN HYOGO PREFECTURE.

12030 APTIC NO. 29842

OXIDATION OF SODIUM SULFIDE AND MERCAPTIDE IN BLACK LIQUOR.

12071 APTIC NO. 29278

DESULFURIZATION OF LIQUEFIED PROPANE GAS. MOLECULAR SIEVE PROCESS.

12053 APTIC NO. 29617

PROBLEM OF OBNOXIOUS ODOR IN INDUSTRIAL POLLUTIONS.

12202 APTIC NO. 29745

ON MEASUREMENT OF ODOR.

12256 APTIC NO. 29726

AUTOMATED ANALYSIS SYSTEMS MAKES KRAFT EMISSION MEASUREMENTS EASY.

12325 APTIC NO. 29913

GAS CHROMATOGRAPHY OF REACTIVE SULFUR GASES IN AIR AT THE PARTS- PER-BILLION LEVEL.

12347 APTIC NO. 30065

A FEW OBSERVATION ON THE GENERATION MECHANISM OF OBNOXIOUS ODOR.

12517 APTIC NO. 29649

THE REACTION KINETICS OF MERCAPTAN WITH OZONE IN THE PPM RANGE.

12497 APTIC NO. 30016

COLLECTION OF LEGISLATIONS RELATED WITH MITI CONCERNING POLLUTIONS.

12646 APTIC NO. 29504

MERCURY COMPOUNDS

MERCURY IN THE ENVIRONMENT.

11992 APTIC NO. 29489

MERCURY IN MAN.

12011 APTIC NO. 29643

INVESTIGATION OF HEAVY METAL POLLUTION IN IWAKI CITY.

12007 APTIC NO. 29787

FOSSIL FUELS AS A SOURCE OF MERCURY POLLUTION.

12019 APTIC NO. 30017

PLANTS AND POLLUTED AIR.

12230 APTIC NO. 30083

LOSS OF MERCURY FROM CHLORALKALI PLANTS.

12120 APTIC NO. 30117

THE ANALYSIS OF MERCURY IN URINE, BLOOD, WATER, AND AIR.

12306 APTIC NO. 29652

INVESTIGATION OF ACTIVATION ANALYSIS OF TRACE MERCURY IN GAS BY RADIOISOTOPE TRACER METHOD.

12328 APTIC NO. 29770

MERCURY IN THE AIR.

12362 APTIC NO. 29490

INTERPRETATION OF RESULTS OF EXAMINATION OF AIR.

12386 APTIC NO. 29545

RATES OF ENERGY TRANSFER FROM N2 A CUBED SIGMA(+) U TO VARIOUS MOLECULES. INITIAL AND FINAL QUANTUM STATES IN THE TRANSFER TO NOX SQUARED PI AND HG(6 1S SUB O), AND VIBRATIONAL RELAXATION OF N2 A CUBED SIGMA(+) U (V EQUALS 1) IN HELIUM.

12481 APTIC NO. 29750

METABOLISM

THE PHYSIOLOGY OF CARBON MONOXIDE PRODUCTION BY DEEP-SEA COELENTERATES: CAUSES AND CONSEQUENCES.

12032 APTIC NO. 27292

MERCURY IN THE ENVIRONMENT.

11992 APTIC NO. 29489

MERCURY IN MAN.

12011 APTIC NO. 29643

LEAD POLLUTION--A GROWING HAZARD TO PUBLIC HEALTH.

11999 APTIC NO. 29872

PROGRESS REPORT. JANUARY-DECEMBER 1969.

12555 APTIC NO. 28850

INTRODUCTION AND GENERAL DESCRIPTION OF THE STUDY AND OF THE PROCEDURES FOR PROLONGED EXPOSURE TO CARBON MONOXIDE AND HYPOXIA.

12530 APTIC NO. 29503

INFLUENCE OF PROLONGED CARBON MONOXIDE EXPOSURE AND ALTITUDE HYPOXIA ON SERUM LIPIDS IN MAN.

12558 APTIC NO. 29529

ON THE PROBLEM OF THE COMBINED EFFECTS OF SULFUR DIOXIDE AND BENZPYRENE ON THE ORGANISMS OF TEST ANIMALS.

12583 APTIC NO. 29585

EXPERIMENTAL STUDIES ON THE EFFECT OF SMALL DOSES OF LEAD AND SULFUR DIOXIDE.

12532 APTIC NO. 29588

THE INFLUENCE OF AIR POLLUTION ON PUBLIC HEALTH.

12586 APTIC NO. 29589

INFLUENCE OF PROLONGED CARBON MONOXIDE EXPOSURE AND HIGH ALTITUDE ON THE COMPOSITION OF BLOOD AND URINE IN MAN.

12559 APTIC NO. 29613

RENAL FUNCTION DURING PROLONGED EXPOSURE TO HYPOXIA AND CARBON MONOXIDE. II. ELECTROLYTE HANDLING.

12577 APTIC NO. 29805

SOME PLANS FOR FUTURE STUDIES FOR LOW LEVEL OF LEAD ON THE HUMAN BEING.

12553 APTIC NO. 29815

AIR POLLUTION BY TRACE METALS IN JAPAN.

12561 APTIC NO. 29816

CIRCULATION, METABOLISM, AND VENTILATION DURING PROLONGED EXPOSURE TO CARBON MONOXIDE AND TO HIGH ALTITUDE.

12560 APTIC NO. 29869

EFFECTS OF ATMOSPHERIC LEAD ON TRAFFIC POLICEMEN IN A MEDIUM SIZED CITY.

12566 APTIC NO. 29958

AIR POLLUTION OXIDANTS - THEIR EFFECTS ON METABOLIC PROCESSES IN PLANTS.

12598 APTIC NO. 29524

METABOLIC EFFECTS OF ATMOSPHERIC FLUORIDES ON PLANTS.

12605 APTIC NO. 29616

ETHYLENE PRODUCTION FROM OZONE INJURED PLANTS.

12596 APTIC NO. 30059

CRITERIA OF INJURIOUSNESS AS THE BASIS OF STANDARDS OF THE HYGIENE OF THE AIR.

12642 APTIC NO. 29574

METAL COMPOUNDS

OIL REFINERS PREPARE FOR ANIT-POLLUTION CONTROLS.

12040 APTIC NO. 29127

MERCURY IN THE ENVIRONMENT.

11992 APTIC NO. 29489

THE EXHAUST GAS COMPOSITION AT THE FM GASOLINE ENGINE.

12046 APTIC NO. 29516

AIR POLLUTANTS GENERATED IN INTRA-FURNACE COMBUSTION.

12020 APTIC NO. 29532

HEAVY METAL POLLUTION IN THE ONAHAMA INDUSTRIAL AREA. 1ST REPORT. DISTRIBUTION OF HEAVY METALS IN SOIL.

12006 APTIC NO. 29539

AIR POLLUTION BY NITRIC OXIDE FROM FERTILIZER FACTORIES.

12051 APTIC NO. 29568

AIR POLLUTION BY LEAD AND ZINC IN THE AREA OF COMBINED METALLURGICA WORKS AND ITS INFLUENCE ON VEGETATION AND SOIL.

12031 APTIC NO. 29572

DESIGN OF NEW SILVER-RECOVERY INCINERATOR.

12008 APTIC NO. 29635

MERCURY IN MAN.

12011 APTIC NO. 29643

DETERMINATION OF LEAD CONTENTS IN AUTOMOBILE EXHAUST GAS.

12013 APTIC NO. 29661

MARKET DEVELOPMENT IN GAS ECONOMY.

12010 APTIC NO. 29781

WHY LEAD IN GASOLINE? THE EFFECT OF LEAD CONTAINING ANTIKNOCK AGENTS FOR OTTO ENGINE FUELS.

11995 APTIC NO. 29782

PHYSICAL-CHEMICAL PROBLEMS OF AIR POLLUTION.

11996 APTIC NO. 29786

INVESTIGATION OF HEAVY METAL POLLUTION IN IWAKI CITY.

12007 APTIC NO. 29787

LEAD POLLUTION--A GROWING HAZARD TO PUBLIC HEALTH.

11999 APTIC NO. 29872

ON COMPOSITION AND LEAD CONTENT OF COMMERCIAL GASOLINE.

12048 APTIC NO. 29936

MARKET TENDENCIES FOR LEAD AND ZINC.

12003 APTIC NO. 30001

FOSSIL FUELS AS A SOURCE OF MERCURY POLLUTION.
12019 APTIC NO. 30017

CAUSES, MEASUREMENT AND LIMITATION OF PARTICULATE EMISSION FROM OIL-FIRED STEAM BOILERS.
12000 APTIC NO. 30021

GASOLINE, LEAD AND AIR POLLUTION.
12014 APTIC NO. 30027

TAKING ANOTHER LOOK BEFORE WE TAKE THE LEAD OUT.
11997 APTIC NO. 30067

BASIC RESEARCH ON SMOKE DESULFURIZATION BY LIME-METALS, 2ND REPORT - EFFECT OF METAL ADDITION ON CALCINATION OF LIME.
12153 APTIC NO. 29080

TWO NEW PROCESSES FOR RECOVERY OF SULPHUR OXIDES FROM SMELTER GASES.
12207 APTIC NO. 29200

PROCESS FOR THE SEPARATION OF SULFUR FROM GAS.
12052 APTIC NO. 29273

BASIC RESEARCH ON SMOKE DESULFURIZATION BY LIME-METALS, 1ST REPORT - DESULFURIZATION EFFECT BY ADDITION OF METAL.
12154 APTIC NO. 29478

STUDY ON MECHANISM OF REACTION WITH SULFUR DIOXIDE OF LIMESTONE POWDER BLOWN INTO COMBUSTION GAS.
12146 APTIC NO. 29479

DUST COLLECTOR FOR ELECTRIC FURNACE MANUFACTURING FERROALLOY.
12123 APTIC NO. 29481

COMPARISON OF THE CATALYTIC ACTIVITY OF MANGANESE DIOXIDE OF ELECTROLYTIC ORIGIN AND OF MANGANESE HYDROXIDE IN THE OXIDATION OF CARBON OXIDES. IV. ADSORPTION AND DESORPTION OF THE REAGENTS AND THE PRODUCTS OF THE REACTION ON MANGANESE HYDROXIDE.
12192 APTIC NO. 29506

HEAT EXTRACTION AIDS DEPOLLUTION OF GASES AND WATER IN CHEVROLET FOUNDRY.
12097 APTIC NO. 29523

EMISSIONS FROM INTERNAL COMBUSTION ENGINE.
12225 APTIC NO. 29531

A NEW FILTER FOR SUSPENDED MATTER WITH HIGH COLLECTION EFFICIENCY AND LOW FLOW RESISTANCE.
12231 APTIC NO. 29578

TRANSPORTATION EMISSIONS.
12175 APTIC NO. 29605

AIR POLLUTION: CONTROLLED OPERATION OF A NSSC RECOVERY FURNACE.
12127 APTIC NO. 29621

FUTURE OF GASOLINE WITH LEAD ANTIKNOCKS.
12243 APTIC NO. 29625

LAW-MAKERS SAY: CLEAN UP OR SHUT DOWN.
12055 APTIC NO. 29628

AN EXPERIMENT ON VALVE RECESSION BY NON-LEADED GASOLINE.
12222 APTIC NO. 29656

COLLECTION EFFICIENCIES OF GLASS FIBER FILTERS FOR EACH SIZE OF LEAD AEROSOLS.
12140 APTIC NO. 29664

EFFECTS OF THE ADDITION OF BARIUM COMPOUND ON THE SMOKE CONCENTRATION OF DIESEL EXHAUST GAS.
12057 APTIC NO. 29696

ADSORPTION OF HYDROGEN AND CARBON MONOXIDE AND THEIR MIXTURES ON IRON FISCHER-TROPSCH CATALYSTS. PART I: SYNTHESIS EXPERIMENTS AND ADSORPTION STUDIES WITH HYDROGEN AND CARBON MONOXIDE ON PROMOTED AND UNPROMOTED IRON CATALYSTS.
12216 APTIC NO. 29701

ASPHALTENE HYDRODESULFURIZATION WITH SMALL CATALYST PARTICLES DISPOSED IN A GUARD CHAMBER-MAIN REACTOR SYSTEM.
12121 APTIC NO. 29719

ABSORPTION OF SULFUROUS ACID GAS BY WATER SOLUTION OF POTASSIUM PHOSPHATE.
12172 APTIC NO. 29731

NEW METHOD OF MANUFACTURING CATALYST FOR EXHAUST GAS.
12133 APTIC NO. 29733

MANUFACTURING OF INDUSTRIAL CATALYST COMPRISING ALUMINA AS CARRIER. (Arumina o tantai to shita kogyo shokubai no seizo). Text in Japanese. Preprint, Japan Industrial Technology Assoc., Tokyo, 12p., 1970. 5 refs. (Presented at the Industrial Catalyst Seminar Tokyo, Japan, Nov. 9, 1970.)
12158 APTIC NO. 29755

EFFICIENCY OF FILTERS FOR RADIOACTIVE AEROSOL.
12155 APTIC NO. 29768

REMOVAL OF CHLORINE FROM GASES.
12177 APTIC NO. 29802

ELECTRIC DUST COLLECTION DEVICE.
12151 APTIC NO. 29819

CATALYTIC OXIDATION OF CARBON MONOXIDE IN THE PRESENCE OF RECENTLY SYNTHESIZED PLATINUM COMPLEXES.
12117 APTIC NO. 29896

UTILIZATION OF CATALYST IN AIR POLLUTION CONTROL (5).
12240 APTIC NO. 29898

EXHAUST GAS PURIFIER.
12179 APTIC NO. 29905

DIRECT DESULFURIZATION OF HEAVY OIL.
12111 APTIC NO. 29908

MUFFLER FOR REMOVING PARTICULATE LEAD FROM EXHAUST GASES OF INTERNAL COMBUSTION ENGINES.
12168 APTIC NO. 29920

DESULFURIZATION OF EXHAUST GAS.
12078 APTIC NO. 29927

INVESTIGATION OF HEAVY OIL DESULFURIZATION IN FIXED-BED CONTACT REACTORS.
12196 APTIC NO. 29931

CONTACT HYDRODESULFURIZATION OF PETROLEUM RESIDUAL OIL.
12200 APTIC NO. 29932

METHOD TO MANUFACTURE CATALYST FOR CLEANING OF EXHAUST GAS FROM INTERNAL COMBUSTION ENGINES.
12150 APTIC NO. 29937

METHOD TO ARREST AND REMOVE WHITE SMOKE PRODUCED FROM MOLTEN ZINC PLATING PROCESS.
12135 APTIC NO. 29940

STUDIES ON AIR POLLUTION CONTROL BY ADDITIVE INJECTION. PART II - PREVENTION OF CLOGGING AT HIGH TEMPERATURE HEATING SURFACE OF BOILER BY ADDING MG(OH)2 POWDER.
12075 APTIC NO. 29941

THE EFFECT OF CATALYST POISONS ON THE ACTIVITY OF CARBON MONOXIDE SHIFT CATALYSTS.
12212 APTIC NO. 29944

CAN ADDITIVES DECREASE DIESEL SMOKE? Power, 114(8):60, Aug. 1970.
12075 APTIC NO. 29941

METHOD TO MANUFACTURE CATALYST FOR DESULFURIZATION BY HYDROGEN ADDITION OF LIQUID HYDROCARBON.
12234 APTIC NO. 29974

CATALYST FOR HEAVY OIL DESULFURIZATION.
12224 APTIC NO. 29977

USE OF VANADIUM CATALYSTS IN PURIFYING INDUSTRIAL WASTE GASES FROM SULFUR DIOXIDE.
12087 APTIC NO. 29980

HIGH-CONCENTRATION SULFUR DIOXIDE FROM CALCINING PYRITES IN THE DKSM FURNACE.
12157 APTIC NO. 29982

COMBUSTION OF WASTES CENTERING AROUND REMOVAL OF NOXIOUS GAS.
12077 APTIC NO. 29985

STUDY ON THE DIRECT DESULFURIZATION OF HEAVY OIL.
12159 APTIC NO. 29989

GASOLINE WITHOUT LEAD. TECHNICAL POSSIBILITIES FOR A NON-LEADED FUEL.
12084 APTIC NO. 30010

KINETICS OF RECOVERING SULFUR FROM THE SPENT SEED IN AN MHD POWER PLANT.
12118 APTIC NO. 30048

CONTROL OF POLLUTANT EMISSION AND SULPHURIC ACID CORROSION FROM COMBUSTION OF RESIDUAL FUEL OIL. PART I: LOW-PRESSURE HEATING BOILERS WITH MECHANICAL ATOMIZING BURNERS.
12164 APTIC NO. 30055

CATALYTIC REDUCTION OF SULFUR DIOXIDE ON IRON-ALUMINA BIFUNCTIONAL CATALYSTS.
12152 APTIC NO. 30064

SULFURIC ACID, SO2 DEVELOPMENTS: REMOVING SO2 AND ACID MIST WITH VENTURI SCRUBBERS.
12209 APTIC NO. 30080

PLANTS AND POLLUTED AIR.
12230 APTIC NO. 30083

ON A DUST-COLLECTING DEVICE FOR A FERROSILICON FURNACE.
12219 APTIC NO. 30086

INFRARED SPECTROSCOPIC STUDY OF THE CATALYTIC OXIDATION OF CAR-

BON MONOXIDE TO CARBON DIOXIDE ON MANGANESE DIOXIDE.
12105 APTIC NO. 30091

DISPOSAL OF HC FROM OIL CONTAINING RESIDUAL OIL AFTER DISTILLATION USING HYDROGEN.
12162 APTIC NO. 30095

THE SCRUBBING OF TAIL GAS FROM SULFURIC ACID PLANTS.
12067 APTIC NO. 30096

SUMMARY OF H2SO4 MANUFACTURE.
12068 APTIC NO. 30099

REDUCING SO2 EMISSION FROM STATIONARY SOURCES.
12098 APTIC NO. 30102

LOSS OF MERCURY FROM CHLORALKALI PLANTS.
12120 APTIC NO. 30117

LEAD SMELTING PLANT CONTROLS AIR EMISSIONS.
12069 APTIC NO. 30124

STUDY ON DESULFURIZATION BY THE INJECTION OF LIMESTONE POWDER INTO FURNACE OF OIL FIRING BOILER (PART I).
12145 APTIC NO. 30131

EXPERIMENTAL INVESTIGATION OF THE PROCESS OF CENTRIFUGAL DUST SEPARATION.
12245 APTIC NO. 30133

REPORT FOR THE INVESTIGATION ON THE METHOD OF SO2 TEST.
12301 APTIC NO. 29381

METAL COMPONENTS OF FLOATING DUST.
12286 APTIC NO. 29464

TENTATIVE METHOD OF ANALYSIS FOR BERYLLIUM CONTENT OF ATMOSPHERIC PARTICULATE MATTER.
12307 APTIC NO. 29487

ON THE EFFECT OF ACCOMPANYING GASES IN QUANTITATIVE ANALYSIS OF HYDROGEN SULFIDE USING METHYLENE BLUE.
12343 APTIC NO. 29505

PARTICLE SIZE MEASURING WITH THE TELEVISION MICROSCOPE QUANTIMET FOR SIZES MINUS 4 MICRONS.
12304 APTIC NO. 29512

A PHOTOGRAPHIC METHOD OF DETERMINING THE EMISSION OF DUST GENERATED BY INDUSTRIAL MACHINERY.
12254 APTIC NO. 29544

THE ANALYSIS OF MERCURY IN URINE, BLOOD, WATER, AND AIR.
12306 APTIC NO. 29652

OXIDATION OF NITROGEN MONOXIDE.
12320 APTIC NO. 29676

JIS ANALYTICAL PROCESS FOR NITROGEN OXIDES IN WASTE GAS.
12355 APTIC NO. 29677

MEASUREMENT OF GASEOUS AND PARTICULATE FLUORINE EMISSIONS.
12322 APTIC NO. 29738

INVESTIGATION OF ACTIVATION ANALYSIS OF TRACE MERCURY IN GAS BY RADIOISOTOPE TRACER METHOD.
12328 APTIC NO. 29770

SIMPLIFIED TECHNIQUES IN AIR POLLUTION MEASUREMENT.
12289 APTIC NO. 29771

STUDIES ON LEAD CHROMATE OBTAINED FROM TETRAALKYL LEAD IN LEADED GASOLINE. I. X-RAY DIFFRACTION TESTS OF THE LEAD CHROMATE CRYSTALS.
12296 APTIC NO. 29810

A SIMPLE TECHNIQUE FOR MEASURING MEAN H2S CONCENTRATION.
12275 APTIC NO. 29844

TESTS WITH A SAMPLING AND MEASUREMENT METHOD FOR ROUTINE DETERMINATION OF FLUORINE IN THE LOWER ATMOSPHERE.
12262 APTIC NO. 29887

PARALLEL DETERMINATION OF NICKEL AND COBALT IN URINE AND ATMOSPHERE.
12300 APTIC NO. 29953

FILTER METHOD FOR THE MEASUREMENT OF ATMOSPHERIC HYDROGEN SULFIDE.
12330 APTIC NO. 30004

DEVELOPMENT OF A METHOD FOR DETERMINING SULPHUR OXIDES IN FLUE GASES.
12265 APTIC NO. 30084

PLANTS AND SOILS AS INDICATORS OF METALS IN THE AIR.
12281 APTIC NO. 30113

CORRECTION: DETERMINATION OF HYDROGEN SULFIDE, SULFUR DIOXIDE, CARBONYL SULFIDE, CARBON DISULFIDE, AND CARBON DIOXIDE IN A GAS MIXTURE.
12341 APTIC NO. 30120

DETERMINATION OF IRON, CHROMIUM, COBALT, NICKEL, AND SCANDIUM IN ASBESTOS BY NEUTRON ACTIVATION ANALYSIS.
12292 APTIC NO. 30129

THE GAS CHROMATOGRAPHIC DETERMINATION OF PESTICIDES. (PART 3) DETERMINATION OF RESIDUES OF ORGANOPHOSPHORUS PESTICIDES.
12349 APTIC NO. 30134

REPORT ON LEAD POLLUTION SURVEY.
12361 APTIC NO. 29465

MERCURY IN THE AIR.
12362 APTIC NO. 29490

STUDY OF THE SUSPENDED PARTICULATES AND LEAD CONCENTRATION IN THE AIR WITHIN THE CITY LIMITS OF MAGDEBURG.
12382 APTIC NO. 29515

INTERPRETATION OF RESULTS OF EXAMINATION OF AIR.
12386 APTIC NO. 29545

AIR POLLUTION BY EXHAUST GAS II. DETERMINATION OF LEAD AND CARBON MONOXIDE INSIDE A GARAGE AND A REPAIR FACTORY IN TOKYO CITY.
12397 APTIC NO. 29576

LEAD POLLUTION AND PHOTOCHEMICAL SMOG IN TOKYO.
12376 APTIC NO. 29647

STATISTICAL ANALYSES OF AIR POLLUTION SAMPLING FREQUENCY IN AN EPIDEMIOLOGIC STUDY.
12378 APTIC NO. 29655

URBAN POLLUTION BY AUTOMOBILE EXHAUST GAS.
12387 APTIC NO. 29744

LEAD CONCENTRATION IN YOKOHAMA AIR.
12399 APTIC NO. 29814

ON AIR POLLUTION IN MIZUSHIMA AREA.
12390 APTIC NO. 29895

DISTRIBUTION OF LEAD IN THE AIR NEAR CITY ROADS.
12388 APTIC NO. 29918

POLLUTIONS AND TOKYO METROPOLITAN GOVERNMENT.
12365 APTIC NO. 29973

SEASONAL VARIATION OF THE CONCENTRATION OF HEAVY METALS IN SUSPENDED DUST ON THE MAIN STREETS.
12384 APTIC NO. 30025

SOME ASPECTS OF THE METAL ION CHEMISTRY OF THE EARTH'S ATMOSPHERE.
12421 APTIC NO. 28891

COLLECTION EFFICIENCY OF WATER DROPLETS IN AGCL AEROSOL.
12430 APTIC NO. 29687

SCAVENGING IN PERSPECTIVE.
12422 APTIC NO. 29688

INTERNATIONAL CONFERENCE ON CONDENSATION NUCLEI AND ICE-FORMING NUCLEI.
12454 APTIC NO. 29699

CONCENTRATION VARIATION OF SOME TRACE METALS IN PRECIPITATION FROM GREAT PLAINS THUNDERSTORMS.
12457 APTIC NO. 29706

SCAVENGING OF SOLUBLE DYE PARTICLES BY RAIN.
12414 APTIC NO. 29708

SCAVENGING OF AEROSOL PARTICLES BY SPRAYS.
12437 APTIC NO. 29711

TRACE ELEMENTS IN ATMOSPHERIC PRECIPITATION AROUND THE OTKAZNOE RESERVOIR.
12432 APTIC NO. 29910

THE STUDY OF THE EVOLUTION OF ATOMIC SIZED PARTICLES IN THE AIR.
12436 APTIC NO. 29946

ON PLUMBIC POLLUTION OF MUNICIPAL ATMOSPHERE--BEHAVIORS OF PLUMBIC COMPOUND AS AEROSOL.
12431 APTIC NO. 30073

BORDEAUX. STUDY OF ATMOSPHERIC POLLUTION IN THE BUILT-UP AREA.
12420 APTIC NO. 30109

COAGULATION OF DUST PARTICLES, IN PARTICULAR BY AEROSOLS OF SEA WATER SALT.
ERROR

OBSERVATIONS ON THE FIGHT AGAINST DUST BY MEANS OF SALINE AEROSOLS.
12475 APTIC NO. 29551

KINETICS OF THE REACTION BETWEEN THE SOLID SODIUM CARBONATE AND THE GASEOUS SULPHUR DIOXIDE. VI. STATISTICAL MOLECULAR MODEL OF THE EXCESS KINETIC FUNCTION.
12487 APTIC NO. 29702

RATES OF ENERGY TRANSFER FROM N2 A CUBED SIGMA(+) U TO VARIOUS MOLECULES. INITIAL AND FINAL QUANTUM STATES IN THE TRANSFER TO NOX SQUARED PI AND HG(6 1S SUB

O), AND VIBRATIONAL RELAXATION OF N2 A CUBED SIGMA(+) U (V EQUALS 1) IN HELIUM.
12481 APTIC NO. 29750

HETEROGENEOUS CATALYSIS INVOLVING ASTOICHIOMETRIC COMPONENTS. IV. INITIATION EFFECTS OF CARBON MONOXIDE AND OXYGEN OXIDE IN THE HYDROPOLYMERIZATION OF PROPENE AND ISOBUTENE.
12488 APTIC NO. 29871

REDUCTION OF MAGNESIUM SULFATE BY CARBON MONOXIDE.
12490 APTIC NO. 29943

SPECTROSCOPIC STUDIES OF PORPHYRINS, PHTHALOCYANINES, AND CS2 IN INERT MATRICES.
12471 APTIC NO. 30050

ADHESION TO PIPE S WALL WITH AEROSOL PARTICLES FLOWING IN A PIPE AS TURBULENT FLOW.
12523 APTIC NO. 30071

SHAPE FACTORS FOR AIRBORNE PARTICLES.
12503 APTIC NO. 30085

LEAD IN THE ENVIRONMENT.
12564 APTIC NO. 29493

TWO OBSERVATIONS IN A FLUORSPAR QUARRY.
12535 APTIC NO. 29565

STUDIES OF THE SIGNIFICANCE OF DUSTS AND GASES FOR THE PATHOLOGY OF INFECTIONS OF THE RESPIRATORY TRACT.
12529 APTIC NO. 29571

EXPERIMENTAL STUDIES ON THE EFFECT OF SMALL DOSES OF LEAD AND SULFUR DIOXIDE.
12532 APTIC NO. 29588

SEMI-AUTOMATIC DETERMINATION OF LEAD IN WIDE BLOOD.
12565 APTIC NO. 29663

ITAI-ITAI (OUCH-OUCH) DISEASE AND CADMIUM POLLUTION IN JAPAN.
12581 APTIC NO. 29673

LEAD MEN HEADING TOWARD DESTRUCTION--SPREADING OMINOUS METAL POLLUTIONS.
12569 APTIC NO. 29789

RENAL FUNCTION DURING PROLONGED EXPOSURE TO HYPOXIA AND CARBON MONOXIDE. II. ELECTROLYTE HANDLING.
12577 APTIC NO. 29805

SOME PLANS FOR FUTURE STUDIES FOR LOW LEVEL OF LEAD ON THE HUMAN BEING.
12553 APTIC NO. 29815

AIR POLLUTION BY TRACE METALS IN JAPAN.
12561 APTIC NO. 29816

FOUR-ALKYL LEAD AND ENVIRONMENTAL POLLUTION.
12588 APTIC NO. 29825

EFFECTS OF ATMOSPHERIC LEAD ON TRAFFIC POLICEMEN IN A MEDIUM SIZED CITY.
12566 APTIC NO. 29958

PROCEEDINGS OF THE 9TH CONFERENCE OF JAPAN ASSOCIATION OF INDUSTRIAL HEALTH.
12526 APTIC NO. 29963

THE ROLE OF TRACE METALS IN CHEMICAL CARCINOGENESIS: ASBESTOS CANCERS.
12543 APTIC NO. 29993

ADDITION OF LEAD TO FUEL - HARMFUL OR DANGEROUS? (Bleizusaetze im Kraftstoff - harmlos oder gefaehrlich)? Text in German. VDI (Ver. Deut. Ingr.) Nachr. (Berlin), 25(9):6, 1971.
12527 APTIC NO. 30000

EFFECT OF AIR AND WATER POLLUTION ON AGRICULTURAL PRODUCTS BY CD, PB, ZN ATTRIBUTED TO MINE REFINERY IN ANNAKA CITY, GUNMA PREFECTURE.
12601 APTIC NO. 27489

ON DAMAGE TO PLANTS BY FLUORIDES IN EXHAUST GAS FROM TILE MANUFACTURING FACTORY.
12606 APTIC NO. 29597

RESEARCH ON THE LEAD INTOXICATION OF THE GALLINACEANS.
12597 APTIC NO. 30033

AIR POLLUTION AND ATMOSPHERIC CORROSION.
12613 APTIC NO. 29222

COMPLEX ALKALI IRON SULFATES A CONTRIBUTION TO THE THERMODYNAMICS OF FIRESDIDE HIGH-TEMPERATURE CORROSION.
12616 APTIC NO. 29783

PROBLEMS IN INDUSTRIAL POWER PLANTS.
12618 APTIC NO. 29956

EFFECT OF LOW SILICIUM CONTENT AND SOME SURFACE TREATMENT ON THE OXIDATION OF CARBON STEELS IN CARBON DIOXIDE ATMOSPHERES AT MEDIUM TEMPERATURES.
12611 APTIC NO. 29995

CORROSION OF NACL-CONTAMINATED FE IN HUMID ATMOSPHERE OF LOW O2 CONTENT.
12621 APTIC NO. 30112

UNLEADED GASOLINE AND SMOG-FREE AUTOS--HOW AND WHY.
12644 APTIC NO. 30035

IT BEGAN WITH THE SMOG IN CALIFORNIA. CALIFORNIA TEST, EUROPEAN TEST--INTERNATIONAL REGULATIONS OF AUTOMOBILE EXHAUST GAS EMISSIONS.
12640 APTIC NO. 30069

EXPANSION AND STRENGTHENING OF AIR POLLUTION CONTROL COUNTERMEASURES.
12671 APTIC NO. 29495

COLLECTION OF LEGISLATIONS RELATED WITH MITI CONCERNING POLLUTIONS.
12646 APTIC NO. 29504

MATERIALS FOR REFERENCE ABOUT ENVIRONMENTAL POLLUTION CONTROL.
12651 APTIC NO. 29818

TOKYO FIGHTS POLLUTION. AN URGENT APPEAL FOR REFORM.
12653 APTIC NO. 29888

METAL FABRICATING AND FIN

PREVENTION OF AIR POLLUTION ON IRON FOUNDRY.
12178 APTIC NO. 29602

HOW EMISSION CONTROL AFFECTS MELTING COSTS.
12628 APTIC NO. 29879

THE COSTS FOR MAINTENANCE OF CLEAN AIR. THE INFLUENCE OF SOCIAL COSTS ON THE SELECTION OF AN INDUSTRIAL SITE.
12633 APTIC NO. 29923

CASTING WORK ENVIRONMENTS AND PUBLIC NUISANCE.
12655 APTIC NO. 29975

METAL POISONING

MERCURY IN THE ENVIRONMENT.
11992 APTIC NO. 29489

MERCURY IN MAN.
12011 APTIC NO. 29643

LEAD IN THE ENVIRONMENT.
12564 APTIC NO. 29493

ITAI-ITAI (OUCH-OUCH) DISEASE AND CADMIUM POLLUTION IN JAPAN.
12581 APTIC NO. 29673

LEAD MEN HEADING TOWARD DESTRUCTION--SPREADING OMINOUS METAL POLLUTIONS.
12569 APTIC NO. 29789

PROCEEDINGS OF THE 9TH CONFERENCE OF JAPAN ASSOCIATION OF INDUSTRIAL HEALTH.
12526 APTIC NO. 29963

RESEARCH ON THE LEAD INTOXICATION OF THE GALLINACEANS.
12597 APTIC NO. 30033

METALS

INVESTIGATION OF HEAVY METAL POLLUTION IN IWAKI CITY.
12007 APTIC NO. 29787

A NEW ENVIRONMENTAL POLLUTANT - POLYCHLORINATED BIPHENYLS (PCB).
12044 APTIC NO. 29984

BASIC RESEARCH ON SMOKE DESULFURIZATION BY LIME-METALS, 1ST REPORT - DESULFURIZATION EFFECT BY ADDITION OF METAL.
12154 APTIC NO. 29478

DUST COLLECTOR FOR ELECTRIC FURNACE MANUFACTURING FERROALLOY.
12123 APTIC NO. 29481

PREVENTION OF AIR POLLUTION ON IRON FOUNDRY.
12178 APTIC NO. 29602

SMELTER POLLUTION CONTROL--FACTS AND PROBLEMS.
12076 APTIC NO. 29622

AN EXPERIMENT ON VALVE RECESSION BY NON-LEADED GASOLINE.
12222 APTIC NO. 29656

DEVELOPMENT OF GAS PURIFICATION INSTALLATIONS FOR ELECTRIC MELTING FURNACES.
12204 APTIC NO. 29740

DESULFURIZATION.
12242 APTIC NO. 29742

BAGHOUSE OPERATION AT THE WHITING, INDIANA PLANT OF THE FEDERATED METALS DIVISION AMERICAN SMELTING AND REFINING COMPANY.
12107 APTIC NO. 29772

ELECTRIC DUST COLLECTION DEVICE.
12151 APTIC NO. 29819

ACID MIST PRECIPITATOR MADE OF TEFLON FIBER.
12061 APTIC NO. 29833

THE NEW DUPLEX IRON MELTING PLANT AT THE M. BUSCH KG IN WEHRSTAPEL.
12094 APTIC NO. 29861

CATALYTIC OXIDATION OF CARBON MONOXIDE IN THE PRESENCE OF RECENTLY SYNTHESIZED PLATINUM COMPLEXES.
12117 APTIC NO. 29896

CONTACT HYDRODESULFURIZATION OF PETROLEUM RESIDUAL OIL.
12200 APTIC NO. 29932

HYDRODESULFURIZATION OF HEAVY QUALITY OIL, RESIDUAL OIL, ETC.. (Jushitsuyu, zansayu to no suisokadatsuryuho). Text in Japanese. (Ishikawajima-Harima Heavy Industries (Japan)) Japan. Pat. Sho 46-819. 3p., Jan. 9, 1971. (Appl. Dec. 25, 1967, claims not given).
12218 APTIC NO. 29933

REMOVAL OF BROWN FUME FROM WASTE GASES OF OPEN HEARTH FURNACE OXYGEN STEELMAKING PROCESS.
12194 APTIC NO. 29945

AIR FILTRATION SYSTEM FOR ELECTRIC FURNACE SWITCH GEAR AT LUKENS STEEL.
12065 APTIC NO. 30018

TFE-FLUOROCARBON FIBER FILTER BAGS--IT COSTS MORE TO GO FIRST CLASS.
12109 APTIC NO. 30121

LEAD SMELTING PLANT CONTROLS AIR EMISSIONS.
12069 APTIC NO. 30124

METAL COMPONENTS OF FLOATING DUST.
12286 APTIC NO. 29464

LUMINESCT SPECTROMETER ANALYSIS METHOD OF QUANTITATIVE ANALYSIS OF METALS IN DUST FLOATING IN ATMOSPHERE.
12279 APTIC NO. 29466

A PHOTOGRAPHIC METHOD OF DETERMINING THE EMISSION OF DUST GENERATED BY INDUSTRIAL MACHINERY.
12254 APTIC NO. 29544

MEASUREMENT OF GASEOUS AND PARTICULATE FLUORINE EMISSIONS.
12322 APTIC NO. 29738

AN AUTOMATIC COULOMETRIC ANALYZER OF OZONE IN THE ATMOSPHERE.
12274 APTIC NO. 29757

AIR POLLUTION.
12363 APTIC NO. 29510

POLLUTIONS AND TOKYO METROPOLITAN GOVERNMENT.
12365 APTIC NO. 29973

STABLE ELEMENTS OF THE ATMOSPHERE AS TRACERS OF PRECIPITATION SCAVENGING.
12445 APTIC NO. 29705

DISSIPATION AND PRECIPITATION OF DUST EMITTED BY A STEELWORKS.
12466 APTIC NO. 29829

DISSIPATION OF SO2 GENERATED IN A STEELWORK INTO THE GROUND LAYER OF THE ATMOSPHERE.
12467 APTIC NO. 29867

THE ADSORPTION OF CARBON MONOXIDE ON CU(001) LEED AND AUGER EMISSION STUDIES.
12496 APTIC NO. 29799

EXPERIENCE WITH INDUSTRIAL MULTI-FLUE CHIMNEYS OF 100-200 IN HEIGHT.
12473 APTIC NO. 29890

CORROSION RATES OF MILD STEEL IN COASTAL, INDUSTRIAL, AND INLAND AREAS OF NORTHERN CALIFORNIA.
12620 APTIC NO. 28810

AIR POLLUTION AND ATMOSPHERIC CORROSION.
12613 APTIC NO. 29222

THE MECHANISM OF ATMOSPHERIC RUSTING AND THE EFFECT OF CU AND P ON THE RUST FORMATION OF LOW ALLOY STEELS.
12615 APTIC NO. 29631

USING TITANIUM IN THE CHEMICAL PLANT.
12610 APTIC NO. 29857

ALUMINUM MATERIAL FOR THE CHEMICAL INDUSTRY.
12624 APTIC NO. 29922

ATMOSPHERIC CORROSION OF SILVER.
12614 APTIC NO. 29951

PROBLEMS IN INDUSTRIAL POWER PLANTS.
12618 APTIC NO. 29956

EFFECT OF LOW SILICIUM CONTENT AND SOME SURFACE TREATMENT ON THE OXIDATION OF CARBON STEELS IN CARBON DIOXIDE ATMOSPHERES AT MEDIUM TEMPERATURES.
12611 APTIC NO. 29995

ATMOSPHERIC CORROSION OF THE ELECTROLYTIC NI-CR COATINGS.
12609 APTIC NO. 30039

CORROSION OF NACL-CONTAMINATED FE IN HUMID ATMOSPHERE OF LOW O2 CONTENT.
12621 APTIC NO. 30112

HOW EMISSION CONTROL AFFECTS MELTING COSTS.
12628 APTIC NO. 29879

THE COSTS FOR MAINTENANCE OF CLEAN AIR. THE INFLUENCE OF SOCIAL COSTS ON THE SELECTION OF AN INDUSTRIAL SITE.
12633 APTIC NO. 29923

EXPANSION AND STRENGTHENING OF AIR POLLUTION CONTROL COUNTERMEASURES.
12671 APTIC NO. 29495

PRESENT SITUATION OF ADMINISTRATION CONCERNING POLLUTIONS.
12648 APTIC NO. 29598

POLLUTIONS PREVENTION PLAN FOR CHIBA AND ICHIHARA CITIES IN CHIBA PREFECTURE.
12650 APTIC NO. 29813

CASTING WORK ENVIRONMENTS AND PUBLIC NUISANCE.
12655 APTIC NO. 29975

METEOROLOGICAL INSTRUMENT

THE EFFECT OF ATMOSPHERIC CONDITIONS ON PLUME RISE.
12455 APTIC NO. 29865

DISCUSSIONS DEPTH OF THE BOUNDARY LAYER.
ERROR

METHANES

PROBLEMS OF PUBLIC NUISANCE CAUSED BY BAD ODORS IN HYOGO PREFECTURE.
12029 APTIC NO. 29599

ON THE REACTIVITY OF AMINES WITH OZONE.
12190 APTIC NO. 29978

COMBUSTION OF WASTES CENTERING AROUND REMOVAL OF NOXIOUS GAS.
12077 APTIC NO. 29985

PROCESS FOR REMOVING SULPHUR FROM GASES.
12139 APTIC NO. 30049

GAS CHROMATOGRAPHIC ANALYSIS OF TRACES OF CO AND CO2.
12326 APTIC NO. 29938

CALCULATION METHODS OF SPECTRAL ABSORPTION OF INFRARED RADIATION BY ATMOSPHERIC GASES.
12323 APTIC NO. 30103

RAYLEIGH SCATTERING OF RUBY-LASER LIGHT BY NEUTRAL GASES.
12450 APTIC NO. 28884

CARBON MONOXIDE IN RAINWATER.
12460 APTIC NO. 29880

IGNITION KINTICS IN HIGH-TEMPERATURE OXIDATION WITH NITROUS OXIDE IN SHOCK WAVES.
12509 APTIC NO. 29095

METHANESULFENYL CHLORIDE. V. THE SPONTANEOUS DECOMPOSITION OF METHANESULFENYL CHLORIDE AND METHYLSULFUR TRICHLORIDE.
12485 APTIC NO. 29674

RATES OF ENERGY TRANSFER FROM N2 A CUBED SIGMA(+) U TO VARIOUS MOLECULES. INITIAL AND FINAL QUANTUM STATES IN THE TRANSFER TO NOX SQUARED PI AND HG(6 1S SUB O), AND VIBRATIONAL RELAXATION OF N2 A CUBED SIGMA(+) U (V EQUALS 1) IN HELIUM.
12481 APTIC NO. 29750

EXPERIMENTAL FUNCTIONS OF INTEGRAL ABSORPTION IN H2O, AND CO2, N2O, CH4, CO, NO VAPOUR BANDS.
12502 APTIC NO. 29964

MATERIALS FOR REFERENCE ABOUT ENVIRONMENTAL POLLUTION CONTROL.
12651 APTIC NO. 29818

MICE

ON HYGIENIC AND TOXICOLOGICAL PROBLEMS OF POLLUTION BY ARSENIC.
12534 APTIC NO. 29587

PULMONARY CHANGES IN 7000 MICE FOLLOWING PROLONGED EXPOSURE TO AMBIENT AND FILTERED LOS ANGELES AIR.
12551 APTIC NO. 29763

CATECHOLAMINE-INDEPENDENT GLYCOGENOLYSIS IN BRAIN DURING CARBON MONOXIDE POISONING.
12545 APTIC NO. 29835

EXPERIMENTAL STUDIES ON THE HEALTH EFFECTS OF AUTO EXHAUST GAS IN LOW CONCENTRATIONS. (REPORT 1) PRELIMINARY EXPERIMENT.
12589 APTIC NO. 29921

MICHIGAN
STATISTICAL ANALYSES OF AIR POLLUTION SAMPLING FREQUENCY IN AN EPIDEMIOLOGIC STUDY.
12378 APTIC NO. 29655

MICROMETEOROLOGY
PESTICIDES IN AIR. VOLATILIZATION OF SOIL-APPLIED DDT AND DDD FROM FLOODED AND NONFLOODED PLOTS.
12047 APTIC NO. 29620
TRACE ELEMENTS IN ATMOSPHERIC PRECIPITATION AROUND THE OTKAZNOE RESERVOIR.
12432 APTIC NO. 29910

MICROORGANISMS
MERCURY IN MAN.
12011 APTIC NO. 29643
AIRBORNE INFLUENZA PR8-A VIRUS INFECTIONS IN ACTIVELY IMMUNIZED MICE.
12167 APTIC NO. 29718
INCIDENCE OF RHODOTORULA SPECIES IN URBAN AIR.
12395 APTIC NO. 29637
COLLECTION EFFICIENCIES OF RAINDROPS FOR SUBMICRON PARTICULATES.
12404 APTIC NO. 29709
INSTRUMENT FOR STUDYING THE ACTION OF EXHAUST GASES DILUTED IN THE AIR, ON BACTERIAL, CELLULAR, AND TISSULAR CULTURES.
12476 APTIC NO. 29849
STUDIES OF THE SIGNIFICANCE OF DUSTS AND GASES FOR THE PATHOLOGY OF INFECTIONS OF THE RESPIRATORY TRACT.
12529 APTIC NO. 29571

MICROSCOPY
PARTICLE SIZE MEASURING WITH THE TELEVISION MICROSCOPE QUANTIMET FOR SIZES MINUS 4 MICRONS.
12304 APTIC NO. 29512

MIDDLE ATMOSPHERE
NEW TREND IN POLLUTIONS COUNTERMEASURES IN THE 70 S.
12660 APTIC NO. 29507

MINERAL PROCESSING
MARKET DEVELOPMENT IN GAS ECONOMY.
12010 APTIC NO. 29781
CEMENT DUST AT GREAT BRITAIN.
12001 APTIC NO. 29832
SOME PROBLEMS ON THE OFFENSIVE ODOR IN HYOGO PREFECTURE.
12030 APTIC NO. 29842
POLLUTION CONTROL SYSTEMS FOR ASPHALT PLANTS.
12233 APTIC NO. 29492
OBSERVATIONS ON THE ELIMINATION OF DUST.
12143 APTIC NO. 29554
MEASURES TAKEN BY THE REGIONAL SOCIAL SECURITY ADMINISTRATION OF LIMOGES TO REDUCE THE RISKS OF SILICOSIS.
12171 APTIC NO. 29561
STUDY OF DUSTINESS AND PURIFICATION OF AIR IN A QUARRY.
12128 APTIC NO. 29562
ELECTROSTATIC PRECIPITATORS FOR CEMENT AND LIME INDUSTRY.
12169 APTIC NO. 29735
PROGRESS IN DEDUSTING TECHNIQUE IN CEMENT WORKS.
12125 APTIC NO. 29830
DUST COLLECTING SYSTEMS IN CEMENT WORKS.
12106 APTIC NO. 29831
HIGH-CONCENTRATION SULFUR DIOXIDE FROM CALCINING PYRITES IN THE DKSM FURNACE.
12157 APTIC NO. 29982
JOINT DEMONSTRATION OF METHODS FOR EXTINGUISHMENT AND CONTROL OF BURNING COAL REFUSE PILES. (FINAL REPORT).
12066 APTIC NO. 30057
TFE-FLUOROCARBON FIBER FILTER BAGS--IT COSTS MORE TO GO FIRST CLASS.
12109 APTIC NO. 30121
APPARATUS FOR TEST PREPARATION IN VERY HUMID ATMOSPHERES AND IN PARTICULAR AT DRILLING OPERATIONS.
12253 APTIC NO. 29541
COMPARISON OF VARIOUS METHODS OF DETERMINING QUARTZ CONTENT IN NOXIOUS DUST.
12263 APTIC NO. 29546
OBSERVATIONS CONCERNING THE USE OF THE A.R.M. APPARATUS AND THE POSSIBILITIES OF UTILIZING THE RESULTS FOR PREVENTIVE MEASURES.
12291 APTIC NO. 29556
THE PROBLEM OF REPRESENTATIVE SAMPLING. CONDITIONS FOR CORRECT USE OF AN APPARATUS FOR SAMPLING.
12252 APTIC NO. 29557
DETERMINATION OF A DOCTRINE FOR VALID SAMPLING.
12273 APTIC NO. 29560
PARALLEL DETERMINATION OF NICKEL AND COBALT IN URINE AND ATMOSPHERE.
12300 APTIC NO. 29953
ATMOSPHERIC POLLUTION. APPARATUS FOR MEASURING THE CONCENTRATION OF CONDENSATION NUCLEI IN THE ATMOSPHERE.
12267 APTIC NO. 30041
ATMOSPHERIC POLLUTION AT MODERN COKE WORKS.
12380 APTIC NO. 29257
PULMONARY COMPLICATIONS OF ASBESTOS EXPOSURE.
12552 APTIC NO. 29221
TWO OBSERVATIONS IN A FLUORSPAR QUARRY.
12535 APTIC NO. 29565
ITAI-ITAI (OUCH-OUCH) DISEASE AND CADMIUM POLLUTION IN JAPAN.
12581 APTIC NO. 29673
ON DAMAGE TO PLANTS BY FLUORIDES IN EXHAUST GAS FROM TILE MANUFACTURING FACTORY.
12606 APTIC NO. 29597
COMPARATIVE STUDY OF PERMISSIBLE LIMITS OF AIR DUSTINESS IN VARIOUS COUNTRIES.
12639 APTIC NO. 29543

MINERAL PRODUCTS
BASIC RESEARCH ON SMOKE DESULFURIZATION BY LIME-METALS, 2ND REPORT - EFFECT OF METAL ADDITION ON CALCINATION OF LIME.
12153 APTIC NO. 29080
BASIC RESEARCH ON SMOKE DESULFURIZATION BY LIME-METALS, 1ST REPORT - DESULFURIZATION EFFECT BY ADDITION OF METAL.
12154 APTIC NO. 29478
STUDY ON MECHANISM OF REACTION WITH SULFUR DIOXIDE OF LIMESTONE POWDER BLOWN INTO COMBUSTION GAS.
12146 APTIC NO. 29479
MEASURES TAKEN BY THE REGIONAL SOCIAL SECURITY ADMINISTRATION OF LIMOGES TO REDUCE THE RISKS OF SILICOSIS.
12171 APTIC NO. 29561
PREVENTION OF AIR POLLUTION ON IRON FOUNDRY.
12178 APTIC NO. 29602
SMELTER POLLUTION CONTROL--FACTS AND PROBLEMS.
12076 APTIC NO. 29622
ELECTROSTATIC PRECIPITATORS FOR CEMENT AND LIME INDUSTRY.
12169 APTIC NO. 29735
STUDIES ON AIR POLLUTION CONTROL BY ADDITIVE INJECTION. PART II - PREVENTION OF CLOGGING AT HIGH TEMPERATURE HEATING SURFACE OF BOILER BY ADDING MG(OH)2 POWDER.
12075 APTIC NO. 29941
STUDY ON THE DESULFURIZATION OF FLUE GAS BY THE USE OF DRY LIME.
12198 APTIC NO. 29972
GAS ADSORPTION BY VOLCANIC ASH.
12197 APTIC NO. 30030
ANNUAL SURVEY ON CUPOLA FURNACES, SEQUENCE EIGHT.
12101 APTIC NO. 30101
REDUCING SO2 EMISSION FROM STATIONARY SOURCES.
12098 APTIC NO. 30102
TFE-FLUOROCARBON FIBER FILTER BAGS--IT COSTS MORE TO GO FIRST CLASS.
12109 APTIC NO. 30121
STUDY ON DESULFURIZATION BY THE INJECTION OF LIMESTONE POWDER INTO FURNACE OF OIL FIRING BOILER (PART I).
12145 APTIC NO. 30131
METAL COMPONENTS OF FLOATING DUST.
12286 APTIC NO. 29464
PARTICLE SIZE MEASURING WITH THE TELEVISION MICROSCOPE QUANTIMET FOR SIZES MINUS 4 MICRONS.
12304 APTIC NO. 29512
A PHOTOGRAPHIC METHOD OF DETERMINING THE EMISSION OF DUST GENERATED BY INDUSTRIAL MACHINERY.
12254 APTIC NO. 29544
COMPARISON OF VARIOUS METHODS OF DETERMINING QUARTZ CONTENT IN NOXIOUS DUST.
12263 APTIC NO. 29546
RESULTS OF COMPARATIVE TESTS ON QUARTZ CONTENT OBTAINED FROM LABORATORIES USING VARIOUS TECHNIQUES OF DETERMINATION.
12327 APTIC NO. 29552
DETERMINATION OF IRON, CHROMIUM, COBALT, NICKEL, AND SCANDIUM

IN ASBESTOS BY NEUTRON ACTIVATION ANALYSIS.
12292 APTIC NO. 30129

TESTS OF REPRESENTATIVE SPECIMENS OF CRYSTALLINE SILICA CONTAINED IN THE ATMOSPHERE OF INDUSTRIAL PLANTS.
12370 APTIC NO. 29553

SOME OBSERVATIONS ON THE ABNORMAL AGGLOMERATION OF CARBON BLACK AND OF GRAPHITE POWDER.
12506 APTIC NO. 29548

HETEROGENEOUS CATALYSIS INVOLVING ASTOICHIOMETRIC COMPONENTS. IV. INITIATION EFFECTS OF CARBON MONOXIDE AND OXYGEN OXIDE IN THE HYDROPOLYMERIZATION OF PROPENE AND ISOBUTENE.
12488 APTIC NO. 29871

PROGRESS REPORT. JANUARY-DECEMBER 1969.
12555 APTIC NO. 28850

PULMONARY COMPLICATIONS OF ASBESTOS EXPOSURE.
12552 APTIC NO. 29221

TWO OBSERVATIONS IN A FLUORSPAR QUARRY.
12535 APTIC NO. 29565

STUDIES ON THE INFLUENCE OF AIR POLLUTION ON THE HEALTH OF THE PEOPLE AT BELOSLAV, DISTRICT OF VARNA, PEOPLE S REPUBLIC OF BULGARIA.
12557 APTIC NO. 29573

ON DAMAGE TO PLANTS BY FLUORIDES IN EXHAUST GAS FROM TILE MANUFACTURING FACTORY.
12606 APTIC NO. 29597

COMPARATIVE STUDY OF PERMISSIBLE LIMITS OF AIR DUSTINESS IN VARIOUS COUNTRIES.
12639 APTIC NO. 29543

INDUSTRIAL REACTION TO SULPHUR DIOXIDE CONTROL EQUIPMENT AND STANDARDS.
12637 APTIC NO. 29604

MINING

OBSERVATIONS ON THE ELIMINATION OF DUST.
12143 APTIC NO. 29554

APPARATUS FOR TEST PREPARATION IN VERY HUMID ATMOSPHERES AND IN PARTICULAR AT DRILLING OPERATIONS.
12253 APTIC NO. 29541

COMPARISON OF VARIOUS METHODS OF DETERMINING QUARTZ CONTENT IN NOXIOUS DUST.
12263 APTIC NO. 29546

OBSERVATIONS CONCERNING THE USE OF THE A.R.M. APPARATUS AND THE POSSIBILITIES OF UTILIZING THE RESULTS FOR PREVENTIVE MEASURES.
12291 APTIC NO. 29556

THE PROBLEM OF REPRESENTATIVE SAMPLING. CONDITIONS FOR CORRECT USE OF AN APPARATUS FOR SAMPLING.
12252 APTIC NO. 29557

ATMOSPHERIC POLLUTION. APPARATUS FOR MEASURING THE CONCENTRATION OF CONDENSATION NUCLEI IN THE ATMOSPHERE.
12267 APTIC NO. 30041

ITAI-ITAI (OUCH-OUCH) DISEASE AND CADMIUM POLLUTION IN JAPAN.
12581 APTIC NO. 29673

COMPARATIVE STUDY OF PERMISSIBLE LIMITS OF AIR DUSTINESS IN VARIOUS COUNTRIES.
12639 APTIC NO. 29543

MISSISSIPPI

MEASUREMENT OF ATMOSPHERIC LEVELS OF PESTICIDES.
12392 APTIC NO. 29812

MISSOURI

NEW EYE ON THE AIR.
12412 APTIC NO. 29644

MISTS

AIR POLLUTANTS GENERATED IN INTRA-FURNACE COMBUSTION.
12020 APTIC NO. 29532

STEAM-SMOKE MIST CONTACT DEVICE.
12174 APTIC NO. 29792

COMBUSTION OF WASTES CENTERING AROUND REMOVAL OF NOXIOUS GAS.
12077 APTIC NO. 29985

SULFURIC ACID, SO2 DEVELOPMENTS: REMOVING SO2 AND ACID MIST WITH VENTURI SCRUBBERS.
12209 APTIC NO. 30080

SUMMARY OF H2SO4 MANUFACTURE.
12068 APTIC NO. 30099

REPORT FOR THE INVESTIGATION ON THE METHOD OF SO2 TEST.
12301 APTIC NO. 29381

POLLUTIONS AND TOKYO METROPOLITAN GOVERNMENT.
12365 APTIC NO. 29973

FORMATION OF FOG ON THE NUCLEI OF HUMIDITY CONDENSATION.
12453 APTIC NO. 29636

ON ADHESION OF SMOKE MIST PARTICULATES FLOWING THROUGH BETWEEN PLAN PARALLEL PLATES.
12518 APTIC NO. 29729

MATERIALS FOR REFERENCE ABOUT ENVIRONMENTAL POLLUTION CONTROL.
12651 APTIC NO. 29818

MOBILE

SMOKE PLUMES MONITORED DAY AND NIGHT. PRACTICAL EXPERIENCE WITH A TV-LASER PLANT IN DUISBURG.
12247 APTIC NO. 30013

MOLYBDENUM COMPOUNDS

ASPHALTENE HYDRODESULFURIZATION WITH SMALL CATALYST PARTICLES DISPOSED IN A GUARD CHAMBER-MAIN REACTOR SYSTEM.
12121 APTIC NO. 29719

CONTACT HYDRODESULFURIZATION OF PETROLEUM RESIDUAL OIL.
12200 APTIC NO. 29932

METHOD TO MANUFACTURE CATALYST FOR DESULFURIZATION BY HYDROGEN ADDITION OF LIQUID HYDROCARBON.
12234 APTIC NO. 29974

CATALYST FOR HEAVY OIL DESULFURIZATION.
12224 APTIC NO. 29977

STUDY ON THE DIRECT DESULFURIZATION OF HEAVY OIL.
12159 APTIC NO. 29989

TRACE ELEMENTS IN ATMOSPHERIC PRECIPITATION AROUND THE OTKAZNOE RESERVOIR.
12432 APTIC NO. 29910

MONITORING

PROBLEMS OF PUBLIC NUISANCE CAUSED BY BAD ODORS IN HYOGO PREFECTURE.
12029 APTIC NO. 29599

PESTICIDES IN AIR. VOLATILIZATION OF SOIL-APPLIED DDT AND DDD FROM FLOODED AND NONFLOODED PLOTS.
12047 APTIC NO. 29620

ATMOSPHERIC POLLUTION IN HEADINGS FOLLOWING SHOTFIRING.
12024 APTIC NO. 29678

CONTROL OF OIL-FIRED HEATERS, A MODERN COMMUNAL TASK.
12015 APTIC NO. 30100

ON DISPOSAL OF PLASTIC WASTES (PVC) BY FLUID LAYER OF MEDIUM.
12074 APTIC NO. 29449

CARBON MONOXIDE AS A COMBUSTION CONTROL PARAMETER.
12072 APTIC NO. 29471

SMELTER POLLUTION CONTROL--FACTS AND PROBLEMS.
12076 APTIC NO. 29622

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

INVESTIGATION ON THE MEASURING ERRORS OF CONDUCTOMETRIC SULFUR DIOXIDE ANALYZER USED FOR AIR POLLUTION MONITOR.
12356 APTIC NO. 29398

A MEASUREMENT GRID FOR AIR POLLUTION IN THE MOUTH OF THE RIVER RHINE IN ROTTERDAM.
12333 APTIC NO. 29460

ANALYZERS FOR MONITORING AIR QUALITY IN POLLUTION.
12272 APTIC NO. 29634

JIS ANALYTICAL PROCESS FOR NITROGEN OXIDES IN WASTE GAS.
12355 APTIC NO. 29677

PROGRESS IN MEASUREMENT OF AIR POLLUTION.
12350 APTIC NO. 29748

ON THE CONTINUOUS MEASUREMENT AND RECORDING OF OXIDANTS BY ELECTRIC CONDUCTIVITY METHOD.
12295 APTIC NO. 29750

TRIAL CONSTRUCTION OF NON-DISPERSION TYPE VISIBLE LIGHT GAS ANALYZE AND DETERMINATION OF NITROGEN DIOXIDE, CHLORINE, AND BROMINE.
12303 APTIC NO. 29762

METHODS OF DETERMINING SULFUR DIOXIDE (REVIEW).
12305 APTIC NO. 29801

PRODUCTION OF GASES OF KNOWN SPECIFIC ACTIVITY IN A REACTOR FOR CALIBRATING GASEOUS EFFLUENT MONITORS.
12264 APTIC NO. 29848

EMISSION MONITORING WITH ACKNOWLEDGED MEASURING UNITS AND ANALYZERS.
12260 APTIC NO. 29955

A METER FOR THE SITE DETERMINATION OF HYDROLYSABLE FLUORIDES IN SULPHUR HEXAFLUORIDE.
12336 APTIC NO. 30007

SMOKE PLUMES MONITORED DAY AND NIGHT. PRACTICAL EXPERIENCE WITH A TV-LASER PLANT IN DUISBURG.
12247 APTIC NO. 30013

PIEZOLECTRIC-ELECTROSTATIC AEROSOL MASS CONCENTRATION MONITOR.
12331 APTIC NO. 30061

A COMPREHENSIVE SAMPLING SYSTEM FOR STUDYING THE RELATION BETWEEN VISIBILITY, METEOROLOGICAL PARAMETERS AND ATMOSPHERIC POLLUTION.
12276 APTIC NO. 30082

SOURCE SAMPLING OF ATMOSPHERIC CONTAMINANTS.
12248 APTIC NO. 30118

RESEARCH FACILITIES NECESSARY TO ADEQUATELY SUPPORT MEASUREMENT OF LOW LEVELS OF POLLUTANTS AND FOLLOW THEIR TRENDS.
12359 APTIC NO. 29050

AIR POLLUTION BY SMOKE AND SO2.
12372 APTIC NO. 29289

AIR POLLUTION BY SMOKE AND SO2.
12373 APTIC NO. 29566

LEAD POLLUTION AND PHOTOCHEMICAL SMOG IN TOKYO.
12376 APTIC NO. 29647

REPORT FROM THE NETHERLANDS: MEASUREMENT GRID FOR AIR POLLUTION.
12364 APTIC NO. 29798

CLEANER AIR IN LONDON.
12377 APTIC NO. 29912

NEW EYE ON THE AIR.
12412 APTIC NO. 29644

CONTINUOUS CHARGED CLOUD-PARTICLE SAMPLER.
12451 APTIC NO. 29712

TURBULENT DIFFUSION THEORY TAKING TURBULENT BOUNDARY LAYER INTO CONSIDERATION.
12463 APTIC NO. 29822

BIOLOGICAL MONITORING GUIDES. FLUORIDES.
12525 APTIC NO. 29807

AIR POLLUTION.
12575 APTIC NO. 29949

OXIDATION STUDY ON ATMOSPHERIC AGING OF POLYMERS.
12622 APTIC NO. 29826

ATMOSPHERIC POLLUTANTS FRENCH LEGISLATION. STANDARD MEASURING METHODS. RECENT COMMERCIAL APPARATUS.
12638 APTIC NO. 29003

IT BEGAN WITH THE SMOG IN CALIFORNIA. CALIFORNIA TEST, EUROPEAN TEST--INTERNATIONAL REGULATIONS OF AUTOMOBILE EXHAUST GAS EMISSIONS.
12640 APTIC NO. 30069

CONTINUOUS MEASUREMENT SYSTEM OF ATMOSPHERIC POLLUTION AT THE MOUTH OF THE RHINE, NEAR ROTTERDAM.
12645 APTIC NO. 28696

NOBODY BREATHES FRESH AIR. FACTS AND ARGUMENTS ABOUT AIR POLLUTION.
12677 APTIC NO. 29459

MONTHLY

MEASUREMENT OF ATMOSPHERIC DUST BY LIGHT SCATTERING METHOD AND HIGH VOLUME SAMPLER METHOD.
12357 APTIC NO. 29864

TENTATIVE METHOD OF ANALYSIS FOR DUSTFALL FROM THE ATMOSPHERE.
12344 APTIC NO. 30119

AIR POLLUTION BY SMOKE AND SO2.
12372 APTIC NO. 29289

AIR POLLUTION BY SMOKE AND SO2.
12373 APTIC NO. 29566

STATISTICAL ANALYSES OF AIR POLLUTION SAMPLING FREQUENCY IN AN EPIDEMIOLOGIC STUDY.
12378 APTIC NO. 29655

URBAN POLLUTION BY AUTOMOBILE EXHAUST GAS.
12387 APTIC NO. 29744

A REPORT OF THE PERIODIC MEASUREMENT OF SOOT AND DUST, AND SULFUR OXIDES IN THE AIR AROUND THE HOSPITAL.
12381 APTIC NO. 29794

ON AIR POLLUTION IN MIZUSHIMA AREA.
12390 APTIC NO. 29695

THE TENDENCY OF AIR POLLUTION AT NAGOYA CITY OBSERVED FROM THE WEIGHT OF FALLING DUST.
12396 APTIC NO. 30076

EVOLUTION OF THE ATMOSPHERIC CONTAMINATION IN MADRID IN 1969.
12371 APTIC NO. 30089

AIR POLLUTION IN AN URBAN ENVIRONMENT.
12413 APTIC NO. 30045

BORDEAUX. STUDY OF ATMOSPHERIC POLLUTION IN THE BUILT-UP AREA.
12420 APTIC NO. 30109

THE INFLUENCE OF AIR POLLUTION UPON THE DISCOLORATION OF THE DYED STUFF AND THE DECREASE OF TENSILE STRENGTH OF SOME FIBERS.
12612 APTIC NO. 29717

MORBIDITY

REPORT FOR THE INVESTIGATION ON THE METHOD OF SO2 TEST.
12301 APTIC NO. 29381

ON THE RELATIONSHIP BETWEEN AIR POLLUTION AND MORBIDITY AND MORTALITY OF THE POPULATION IN POLISH TOWNS.
12563 APTIC NO. 29575

THE RESEARCH FOR THE EFFECTS OF AIR POLLUTION ON THE HUMAN BODY. (II) THE RELATIONSHIP BETWEEN ASTHMA-LIKE DISEASES OF THE SCHOOL CHILDREN AND AIR POLLUTION IN KITAKYUSHU.
12524 APTIC NO. 29683

STUDY ON THE EFFECTS OF AIR POLLUTION ON HUMAN BODY--WITH SPECIAL REFERENCE TO OBJECTIVE, COMPARATIVE STUDY OF ALL THE INHABITANTS BY CHEST X-RAY RINDINGS.
12554 APTIC NO. 29904

STUDIES ON AIR POLLUTION AND BRONCHIAL ASTHMA. REPORT 1.
12548 APTIC NO. 29925

ATMOSPHERIC POLLUTIONS AND HEALTH.
12537 APTIC NO. 29971

RESEARCH ON THE LEAD INTOXICATION OF THE GALLINACEANS.
12597 APTIC NO. 30033

SOME RECENT TOPICS IN AIR POLLUTION AND HEALTH IN NEW YORK.
12668 APTIC NO. 29817

FEDERALISM MAKES ENVIRONMENTAL PROTECTION DIFFICULT.
12654 APTIC NO. 29969

MORTALITY

PATHOLOGICAL STUDY ON THE EXPERIMENTAL RABBITS AT AIR-POLLUTED AREA IN YOKKAICHI.
12590 APTIC NO. 29502

CHART FOR EVALUATION OF THE RISK OF SILICOSIS.
12542 APTIC NO. 29559

STUDIES OF THE SIGNIFICANCE OF DUSTS AND GASES FOR THE PATHOLOGY OF INFECTIONS OF THE RESPIRATORY TRACT.
12529 APTIC NO. 29571

ON THE RELATIONSHIP BETWEEN AIR POLLUTION AND MORBIDITY AND MORTALITY OF THE POPULATION IN POLISH TOWNS.
12563 APTIC NO. 29575

CANCER MORTALITY IN RELATION TO NATIONAL CONSUMPTION OF CIGARETTES, SOLID FUEL, TEA AND COFFEE.
12585 APTIC NO. 29608

SOME RECENT TOPICS IN AIR POLLUTION AND HEALTH IN LONDON.
12562 APTIC NO. 29882

STUDIES ON PROGNOSIS OF CHRONIC BRONCHITIS.
12587 APTIC NO. 29916

ATMOSPHERIC POLLUTIONS AND HEALTH.
12537 APTIC NO. 29971

CARBON MONOXIDE AND SURVIVAL FROM MYOCARDIAL INFARCTION.
12541 APTIC NO. 30127

SOME RECENT TOPICS IN AIR POLLUTION AND HEALTH IN NEW YORK.
12668 APTIC NO. 29817

FEDERALISM MAKES ENVIRONMENTAL PROTECTION DIFFICULT.
12654 APTIC NO. 29969

MOTTLING

DAMAGE TO PLANTS BY AIR POLLUTANTS.
12603 APTIC NO. 29746

MOUNTAINS

ANALYSIS OF HC OF LOW GRADE IN ATMOSPHERE.
12391 APTIC NO. 29482

EPISODE 104.
12410 APTIC NO. 29695

PARTICLE AND DEUTERIUM CONTENT IN SNOW.
12449 APTIC NO. 29775

THE EFFECTS OF LOW LEVEL FLUORINE POLLUTION IN A MOUNTAIN VALLEY.
12595 APTIC NO. 29991

MULTIPLE CHAMBER INCINERA

DESIGN OF NEW SILVER-RECOVERY INCINERATOR.
12008 APTIC NO. 29635

INCINERATOR DESIGNED TO ANTICIPATE PROBLEMS.
11994 APTIC NO. 29669

EXPERIMENTAL STUDY ON PLASTICS INCINERATION.
12017 APTIC NO. 29841

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

MERCURY IN MAN.
12011 APTIC NO. 29643

TERATOGENIC EFFECTS OF ANESTHETIC AGENTS: NITROUS OXIDE.
12584 APTIC NO. 28919

N

NAPHTHALENES

DETERMINATION OF AROMATIC HYDROCARBONS EMITTED FROM THE DRY BATTERY PLANT.
12287 APTIC NO. 29862

QUENCHING OF NAPHTHALENE LUMINESCENCE BY OXYGEN AND NITRIC OXIDE.
12495 APTIC NO. 29611

NATURAL GAS

THE INDUSTRIAL FIRING SYSTEMS OF THE 1970'S.
12025 APTIC NO. 28968

MARKET DEVELOPMENT IN GAS ECONOMY.
12010 APTIC NO. 29781

STUDY OF THE COMBUSTION OF PARTLY PRE-MIXED LAMINAR NATURAL GAS FLAMES.
12021 APTIC NO. 29948

OUTLOOK OF ENVIRONMENTAL POLLUTION AND ITS PREVENTION TECHNOLOGY.
12124 APTIC NO. 29600

DESULFURIZATION OF LIQUEFIED PROPANE GAS. MOLECULAR SIEVE PROCESS.
12057 APTIC NO. 29617

REMOVAL OF CHLORINE FROM GASES.
12177 APTIC NO. 29802

MODERN OIL BURNING TECHNOLOGY AS DISPLAYED ON THE INTHERM IN STUTTGART AND THE 6.ISH IN FRANKFURT 1971.
12187 APTIC NO. 29824

QUANTITATIVE ALDEHYDE DETERMINATION IN THE AIR OF WORKING PLACES.
12317 APTIC NO. 30023

NECROSIS

METABOLIC EFFECTS OF ATMOSPHERIC FLUORIDES ON PLANTS.
12605 APTIC NO. 29616

NERVOUS SYSTEM

LEAD POLLUTION--A GROWING HAZARD TO PUBLIC HEALTH.
11999 APTIC NO. 29872

GENERATION AND MEASUREMNT OF AIR IONS FOR MEDICAL APPLICATIONS AND THEIR INFLUENCE ON REACTION TIME AND MONOSYNAPTIC REFLEX OF MAN.
12547 APTIC NO. 29267

LOW LEVEL CARBON MONOXIDE EXPOSURE AND HUMAN PSYCHOMOTOR PERFORMANCE.
12573 APTIC NO. 29473

EXPERIMENTAL STUDIES ON THE EFFECT OF SMALL DOSES OF LEAD AND SULFUR DIOXIDE.
12532 APTIC NO. 29588

LEAD MEN HEADING TOWARD DESTRUCTION--SPREADING OMINOUS METAL POLLUTIONS.
12569 APTIC NO. 29789

CATECHOLAMINE-INDEPENDENT GLYCOGENOLYSIS IN BRAIN DURING CARBON MONOXIDE POISONING.
12545 APTIC NO. 29835

RECENT RESEARCH INTO THE EFFECT OF LOW LEVEL CARBON MONOXIDE EXPOSURE ON PSYCHOMOTOR PERFORMANCE IN HEALTHY HUMANS.
12574 APTIC NO. 29846

RESEARCH ON THE LEAD INTOXICATION OF THE GALLINACEANS.
12597 APTIC NO. 30033

NEUTRAL CONDITION

A NUMERICAL EXPERIMENT IN SIMULATING THE TRANSPORT OF SULFUR DIOXIDE THROUGH THE ATMOSPHERE.
12446 APTIC NO. 29952

NEUTRON ACTIVATION ANALYS

INVESTIGATION OF ACTIVATION ANALYSIS OF TRACE MERCURY IN GAS BY RADIOISOTOPE TRACER METHOD.
12328 APTIC NO. 29770

DETERMINATION OF IRON, CHROMIUM, COBALT, NICKEL, AND SCANDIUM IN ASBESTOS BY NEUTRON ACTIVATION ANALYSIS.
12292 APTIC NO. 30129

COLLECTION EFFICIENCY OF WATER DROPLETS IN AGCL AEROSOL.
12430 APTIC NO. 29687

STABLE ELEMENTS OF THE ATMOSPHERE AS TRACERS OF PRECIPITATION SCAVENGING.
12445 APTIC NO. 29705

NEW YORK CITY

TOWARD A RATIONAL POWER POLICY: RECONCILING NEEDS FOR ENERGY AND ENVIRONMENTAL PROTECTION.
12403 APTIC NO. 29986

SOME RECENT TOPICS IN AIR POLLUTION AND HEALTH IN NEW YORK.
12668 APTIC NO. 29817

NEW YORK STATE

MEASUREMENT OF ATMOSPHERIC LEVELS OF PESTICIDES.
12392 APTIC NO. 29812

TOWARD A RATIONAL POWER POLICY: RECONCILING NEEDS FOR ENERGY AND ENVIRONMENTAL PROTECTION.
12403 APTIC NO. 29986

SOME RECENT TOPICS IN AIR POLLUTION AND HEALTH IN NEW YORK.
126 APTIC NO. 29817

NICKEL

ATMOSPHERIC CORROSION OF THE ELECTROLYTIC NI-CR COATINGS.
12609 APTIC NO. 30039

NICKEL COMPOUNDS

ASPHALTENE HYDRODESULFURIZATION WITH SMALL CATALYST PARTICLES DISPOSED IN A GUARD CHAMBER-MAIN REACTOR SYSTEM.
12121 APTIC NO. 29719

DIRECT DESULFURIZATION OF HEAVY OIL.
12111 APTIC NO. 29908

CONTACT HYDRODESULFURIZATION OF PETROLEUM RESIDUAL OIL.
12200 APTIC NO. 29932

METHOD TO MANUFACTURE CATALYST FOR DESULFURIZATION BY HYDROGEN ADDITION OF LIQUID HYDROCARBON.
12234 APTIC NO. 29974

CATALYST FOR HEAVY OIL DESULFURIZATION.
12224 APTIC NO. 29977

STUDY ON THE DIRECT DESULFURIZATION OF HEAVY OIL.
12159 APTIC NO. 29989

PARALLEL DETERMINATION OF NICKEL AND COBALT IN URINE AND ATMOSPHERE.
12300 APTIC NO. 29933

PLANTS AND SOILS AS INDICATORS OF METALS IN THE AIR.
12281 APTIC NO. 30113

DETERMINATION OF IRON, CHROMIUM, COBALT, NICKEL, AND SCANDIUM IN ASBESTOS BY NEUTRON ACTIVATION ANALYSIS.
12292 APTIC NO. 30129

TRACE ELEMENTS IN ATMOSPHERIC PRECIPITATION AROUND THE OTKAZNOE RESERVOIR.
12432 APTIC NO. 29910

COLLECTION OF LEGISLATIONS RELATED WITH MITI CONCERNING POLLUTIONS.
12646 APTIC NO. 29504

NITRATES

AIR POLLUTION BY NITRIC OXIDE FROM FERTILIZER FACTORIES.
12051 APTIC NO. 29568

EFFICIENCY OF FILTERS FOR RADIOACTIVE AEROSOL.
12155 APTIC NO. 29768

GASIFICATION OF HYDROCARBONS.
12137 APTIC NO. 29779

JIS ANALYTICAL PROCESS FOR NITROGEN OXIDES IN WASTE GAS.
12355 APTIC NO. 29677

SUSPENDED PARTICULATES IN OSAKA CITY.
12375 APTIC NO. 29853

PHOTOCHEMICAL SMOG AND ITS REACTION MECHANISM.
12459 APTIC NO. 29934

BORDEAUX. STUDY OF ATMOSPHERIC POLLUTION IN THE BUILT-UP AREA.
12420 APTIC NO. 30109

DETERMINATION OF THE DISPERSION OF SCATTERING NEAR THE CRITICAL

POINT USING THE SCATTERED LIGHT INDICATRIX.
12499 APTIC NO. 30051

AIR POLLUTION OXIDANTS - THEIR EFFECTS ON METABOLIC PROCESSES IN PLANTS.
12598 APTIC NO. 29524

ON COMPOSITE HARM TO PLANTS BY SULFUROUS ACID GAS AND OXIDANT.
12604 APTIC NO. 29671

NITRIC ACID

NOMOGRAPH GIVES NO OXIDATION.
11993 APTIC NO. 27535

NITROGEN OXIDES ANALYSIS.
12042 APTIC NO. 29538

ELIMINATION OF OXIDES CONTAINED IN CERTAIN RESIDUAL INDUSTRIAL GASES.
12129 APTIC NO. 30043

REDUCING SO2 EMISSION FROM STATIONARY SOURCES.
12098 APTIC NO. 30102

ON THE EFFECT OF ACCOMPANYING GASES IN QUANTITATIVE ANALYSIS OF HYDROGEN SULFIDE USING METHYLENE BLUE.
12343 APTIC NO. 29505

METHOD OF CALCULATING EQUILIBRIUM COMPOSITIONS IN INTERACTION OF NITROGEN OXIDES WITH NITRIC ACID SOLUTIONS.
12470 APTIC NO. 29800

MATERIALS FOR REFERENCE ABOUT ENVIRONMENTAL POLLUTION CONTROL.
12651 APTIC NO. 29818

NITRIC OXIDE (NO)

NOMOGRAPH GIVES NO OXIDATION.
11993 APTIC NO. 27535

COMBUSTION REGULARITY A KEY TO SPARK-IGNITION ENGINE EMISSIONS REDUCTION? Preprint, Academia R. P. R., Bucharest, 15p., 1970. 4 refs. (Presented at the Internal Combustion Engines Conference, 2nd International, Bucharest (Rumania), 1970.)
12023 APTIC NO. 27641

THE EXHAUST GAS COMPOSITION AT THE FM GASOLINE ENGINE.
12046 APTIC NO. 29516

AIR POLLUTANTS GENERATED IN INTRA-FURNACE COMBUSTION.
12020 APTIC NO. 29532

NITROGEN OXIDES ANALYSIS.
12042 APTIC NO. 29538

AIR POLLUTION BY NITRIC OXIDE FROM FERTILIZER FACTORIES.
12051 APTIC NO. 29568

ATMOSPHERIC POLLUTION IN HEADINGS FOLLOWING SHOTFIRING.
12024 APTIC NO. 29678

EMISSION OF AIR POLLUTANTS FROM AIRCRAFT JET ENGINES.
12035 APTIC NO. 29734

PHYSICAL-CHEMICAL PROBLEMS OF AIR POLLUTION.
11996 APTIC NO. 29786

JET AIRCRAFT AIR POLLUTANT PRODUCTION AND DISPERSION.
12016 APTIC NO. 30130

THE AUTOMOBILE AND AIR POLLUTION.
12186 APTIC NO. 29633

EFFECTS OF WATER INJECTION IN INLET TUBE ON NO CONCENTRATION IN DIESEL EXHAUST.
12220 APTIC NO. 29911

FIRST RESULTS WITH THE M.A.N.-EXPERIMENTAL GAS TURBINE FOR COMMERCIAL VEHICLES.
12131 APTIC NO. 30068

QUANTITATIVE ANALYSIS OF NO IN ATMOSPHERE - ON CHANGES IN SALTZMAN COEFFICIENT WITH CHANGE IN COMPOSITION OF SALTZMAN REAGENTS.
12308 APTIC NO. 29480

OXIDATION OF NITROGEN MONOXIDE.
12320 APTIC NO. 29676

JIS ANALYTICAL PROCESS FOR NITROGEN OXIDES IN WASTE GAS.
12355 APTIC NO. 29677

CALCULATION METHODS OF SPECTRAL ABSORPTION OF INFRARED RADIATION BY ATMOSPHERIC GASES.
12323 APTIC NO. 30103

FRACTIONATION OF OXYGEN ISOTOPES BETWEEN NO AND H20.
12297 APTIC NO. 30114

TEN YEARS OF AIR POLLUTION IN HOKKAIDO.
12367 APTIC NO. 29727

URBAN POLLUTION BY AUTOMOBILE EXHAUST GAS.
12387 APTIC NO. 29744

POLLUTIONS AND TOKYO METROPOLITAN GOVERNMENT.
12365 APTIC NO. 29973

STUDIES ON AIR POLLUTION DUE TO AUTOMOBILE EXHAUST. REPORT 15: AIR POLLUTION AT THE VICINITY OF BOOTHS IN MEISHIN HIGHWAY.
12389 APTIC NO. 30075

EXPERIMENT ON PHOTOCHEMICAL REACTION OF MOTOR EXHAUST GAS.
12469 APTIC NO. 29500

PHOTOCHEMICAL SMOG.
12418 APTIC NO. 29672

AN EXPERIMENTAL STUDY OF PHOTOCHEMICAL OXIDATION OF ORGANIC SUBSTANCES IN THE ATMOSPHERE.
12441 APTIC NO. 29681

NO-X CONTROL FROM STATIONARY SOURCES.
12427 APTIC NO. 29764

PHOTOCHEMICAL SMOG AND ITS REACTION MECHANISM.
12459 APTIC NO. 29934

PHOTOCHEMICAL REACTIONS OF MOTOR VEHICLE EXHAUST GASES.
12402 APTIC NO. 29960

EXPLOSIVE OXIDATION OF NITROUS OXIDE MIXED WITH OZONE.
12511 APTIC NO. 27268

STUDIES ON PHOTOLYSIS OF NITORGEN OXIDE.
12513 APTIC NO. 29527

INVESTIGATION OF NITRIC OXIDE FORMATION KINETICS IN COMBUSTION PROCESSES: THE HYDROGEN-OXYGEN-NITROGEN REACTION.
12477 APTIC NO. 29610

QUENCHING OF NAPHTHALENE LUMINESCENCE BY OXYGEN AND NITRIC OXIDE.
12495 APTIC NO. 29611

RATES OF ENERGY TRANSFER FROM N2 A CUBED SIGMA(+) U TO VARIOUS MOLECULES. INITIAL AND FINAL QUANTUM STATES IN THE TRANSFER TO NOX SQUARED PI AND HG(6 1S SUB O), AND VIBRATIONAL RELAXATION OF N2 A CUBED SIGMA(+) U (V EQUALS 1) IN HELIUM.
12481 APTIC NO. 29750

KINETICS AND MECHANISMS OF THE VIBRATIONAL RELAXATION OF NOX2PI(V EQUALS 1) IN THE TEMPERATURE RANGE 100-433 K.
12474 APTIC NO. 29881

EXPERIMENTAL FUNCTIONS OF INTEGRAL ABSORPTION IN H2O, AND CO2, N2O, CH4, CO, NO VAPOUR BANDS.
12502 APTIC NO. 29964

VIBRATIONAL EXCITATION AND COMPOUND STATES IN NO.
12510 APTIC NO. 30037

AIR POLLUTION OXIDANTS - THEIR EFFECTS ON METABOLIC PROCESSES IN PLANTS.
12598 APTIC NO. 29524

MATERIALS FOR REFERENCE ABOUT ENVIRONMENTAL POLLUTION CONTROL.
12651 APTIC NO. 29818

NITRITES

QUALITATIVE ANALYSIS OF EXHAUST GAS FROM FISH MEAL PLANT.
12028 APTIC NO. 29662

ON THE EFFECT OF ACCOMPANYING GASES IN QUANTITATIVE ANALYSIS OF HYDROGEN SULFIDE USING METHYLENE BLUE.
12343 APTIC NO. 29505

JIS ANALYTICAL PROCESS FOR NITROGEN OXIDES IN WASTE GAS.
12355 APTIC NO. 29677

BORDEAUX. STUDY OF ATMOSPHERIC POLLUTION IN THE BUILT-UP AREA.
12420 APTIC NO. 30109

NITROGEN

PROBLEMS OF PUBLIC NUISANCE CAUSED BY BAD ODORS IN HYOGO PREFECTURE.
12029 APTIC NO. 29599

QUALITATIVE ANALYSIS OF EXHAUST GAS FROM FISH MEAL PLANT.
12028 APTIC NO. 29662

METHOD TO REMOVE HARMFUL SUBSTANCES FROM STACK GAS BY-PRODUCING AMMONIUM SULFATE AND OTHERS (XV) - ACTIVATION ENERGY OF ACTIVATED CARBON FOR SO2 ADSORPTION.
12161 APTIC NO. 29648

CALCULATION OF EXCESS AIR FOR COMBUSTION PROCESSES USING O2-TO-N2 RATIO.
12176 APTIC NO. 29796

METHOD TO MANUFACTURE CATALYST FOR DESULFURIZATION BY HYDROGEN ADDITION OF LIQUID HYDROCARBON.
12234 APTIC NO. 29974

PROCESS FOR REMOVING SULPHUR FROM GASES.
12139 APTIC NO. 30049

JIS ANALYTICAL PROCESS FOR NITROGEN OXIDES IN WASTE GAS.
12355 APTIC NO. 29677

TRIAL CONSTRUCTION OF NON-DISPERSION TYPE VISIBLE LIGHT GAS

ANALYZE AND DETERMINATION OF NITROGEN DIOXIDE, CHLORINE, AND BROMINE.
12303 APTIC NO. 29762

RAYLEIGH SCATTERING OF RUBY-LASER LIGHT BY NEUTRAL GASES.
12450 APTIC NO. 28884

MECHANISM OF SINGLET MOLECULAR OXYGEN FORMATION FROM PHOTOLYSIS OF OZONE AT 2537 A.
12424 APTIC NO. 30110

EXPLOSIVE OXIDATION OF NITROUS OXIDE MIXED WITH OZONE.
12511 APTIC NO. 27268

MOLECULAR ORBITAL STUDY OF NH2, NO2, AND NF2.
ERROR

INVESTIGATION OF NITRIC OXIDE FORMATION KINETICS IN COMBUSTION PROCESSES: THE HYDROGEN-OXYGEN-NITROGEN REACTION.
12477 APTIC NO. 29610

THE ULTRA-VIOLET PHOTOLYSIS OF OZONE IN THE PRESENCE OF MOLECULAR OXYGEN.
12500 APTIC NO. 29778

ENVIRONMENT PRESERVATION - FROM THE ECOLOGICAL POINT OF VIEW.
12678 APTIC NO. 29961

NITROGEN DIOXIDE (NO2)

THE INFLUENCE OF ENVIRONMENTAL PROTECTION ON PLANNING, OPERATION AND ECONOMY OF STEAM POWER PLANTS. I. MAINTENANCE OF CLEAN AIR.
12036 APTIC NO. 29519

AIR POLLUTANTS GENERATED IN INTRA-FURNACE COMBUSTION.
12020 APTIC NO. 29532

NITROGEN OXIDES ANALYSIS.
12042 APTIC NO. 29538

NITROGEN DIOXIDE.
11988 APTIC NO. 29567

ATMOSPHERIC POLLUTION IN HEADINGS FOLLOWING SHOTFIRING.
12024 APTIC NO. 29678

PHYSICAL-CHEMICAL PROBLEMS OF AIR POLLUTION.
11996 APTIC NO. 29786

ELIMINATION OF OXIDES CONTAINED IN CERTAIN RESIDUAL INDUSTRIAL GASES.
12129 APTIC NO. 30043

QUANTITATIVE ANALYSIS OF NO IN ATMOSPHERE - ON CHANGES IN SALTZMAN COEFFICIENT WITH CHANGE IN COMPOSITION OF SALTZMAN REAGENTS.
12308 APTIC NO. 29480

ON THE EFFECT OF ACCOMPANYING GASES IN QUANTITATIVE ANALYSIS OF HYDROGEN SULFIDE USING METHYLENE BLUE.
12343 APTIC NO. 29505

THE ADIABATIC FLASH PHOTOLYSIS OF NO2 AND SO2.
12259 APTIC NO. 29630

ANALYZERS FOR MONITORING AIR QUALITY IN POLLUTION.
12272 APTIC NO. 29634

JIS ANALYTICAL PROCESS FOR NITROGEN OXIDES IN WASTE GAS.
12355 APTIC NO. 29677

TRIAL CONSTRUCTION OF NON-DISPERSION TYPE VISIBLE LIGHT GAS ANALYZE AND DETERMINATION OF NITROGEN DIOXIDE, CHLORINE, AND BROMINE.
12303 APTIC NO. 29762

URBAN POLLUTION BY AUTOMOBILE EXHAUST GAS.
12387 APTIC NO. 29744

ON AIR POLLUTION IN MIZUSHIMA AREA.
12390 APTIC NO. 29895

POLLUTIONS AND TOKYO METROPOLITAN GOVERNMENT.
12365 APTIC NO. 29973

STUDIES ON AIR POLLUTION DUE TO AUTOMOBILE EXHAUST. REPORT 15: AIR POLLUTION AT THE VICINITY OF BOOTHS IN MEISHIN HIGHWAY.
12389 APTIC NO. 30075

PROBLEMS OF AIR POLLUTION AND MEASURES TO COMBAT IT IN EL PASO, TEXAS.
12368 APTIC NO. 30094

EXPERIMENT ON PHOTOCHEMICAL REACTION OF MOTOR EXHAUST GAS.
12469 APTIC NO. 29500

NEW EYE ON THE AIR.
12412 APTIC NO. 29644

AN EXPERIMENTAL STUDY OF PHOTOCHEMICAL OXIDATION OF ORGANIC SUBSTANCES IN THE ATMOSPHERE.
12441 APTIC NO. 29681

NO-X CONTROL FROM STATIONARY SOURCES.
12427 APTIC NO. 29764

PHOTOCHEMICAL SMOG AND ITS REACTION MECHANISM.
12459 APTIC NO. 29934

DISSOCIATIVE ELECTRON ATTACHMENT PROCESSES IN SO2 AND NO2.
12444 APTIC NO. 30008

IGNITION KINTICS IN HIGH-TEMPERATURE OXIDATION WITH NITROUS OXIDE IN SHOCK WAVES.
12509 APTIC NO. 29095

MOLECULAR ORBITAL STUDY OF NH2, NO2, AND NF2.
ERROR

STUDIES ON PHOTOLYSIS OF NITORGEN OXIDE.
12513 APTIC NO. 29527

CALCULATIONS OF THE GROUND AND EXCITED STATE ENERGIES OF NO2.
12489 APTIC NO. 29530

ELECTRON ENERGY LOSS SPECTRA OF NO2 AND SO2.
12480 APTIC NO. 30079

EFFECT OF LONG-TERM JOINT ACTION OF CARBON MONOXIDE, NITROGEN DIOXIDE AND AMMONIUM ON REQUIREMENTS OF ALBINO RATS IN VITAMIN B6.
12572 APTIC NO. 29753

AIR POLLUTION OXIDANTS - THEIR EFFECTS ON METABOLIC PROCESSES IN PLANTS.
12598 APTIC NO. 29524

ON COMPOSITE HARM TO PLANTS BY SULFUROUS ACID GAS AND OXIDANT.
12604 APTIC NO. 29671

THE INFLUENCE OF AIR POLLUTION UPON THE DISCOLORATION OF THE DYED STUFF AND THE DECREASE OF TENSILE STRENGTH OF SOME FIBERS.
12612 APTIC NO. 29717

COLLECTION OF LEGISLATIONS RELATED WITH MITI CONCERNING POLLUTIONS.
12646 APTIC NO. 29504

MATERIALS FOR REFERENCE ABOUT ENVIRONMENTAL POLLUTION CONTROL.
12651 APTIC NO. 29818

NITROMETHANE

DETERMINATION OF THE DISPERSION OF SCATTERING NEAR THE CRITICAL POINT USING THE SCATTERED LIGHT INDICATRIX.
12499 APTIC NO. 30051

NITROUS ACID

FRACTIONATION OF OXYGEN ISOTOPES BETWEEN NO AND H20.
12297 APTIC NO. 30114

NITROUS OXIDE (N2O)

CALCULATION METHODS OF SPECTRAL ABSORPTION OF INFRARED RADIATION BY ATMOSPHERIC GASES.
12323 APTIC NO. 30103

RAYLEIGH SCATTERING OF RUBY-LASER LIGHT BY NEUTRAL GASES.
12450 APTIC NO. 28884

EXPLOSIVE OXIDATION OF NITROUS OXIDE MIXED WITH OZONE.
12511 APTIC NO. 27268

INELASTIC ELECTRON SCATTERING FROM NITROUS OXIDE BETWEEN 5.0 AND 20.0 EV ENERGY LOSS.
12521 APTIC NO. 27460

LASER-INDUCED VIBRATIONAL FLUORESCENCE IN NITROUS OXIDE.
12472 APTIC NO. 28910

IGNITION KINTICS IN HIGH-TEMPERATURE OXIDATION WITH NITROUS OXIDE IN SHOCK WAVES.
12509 APTIC NO. 29095

EXPERIMENTAL FUNCTIONS OF INTEGRAL ABSORPTION IN H2O, AND CO2, N2O, CH4, CO, NO VAPOUR BANDS.
12502 APTIC NO. 29964

TERATOGENIC EFFECTS OF ANESTHETIC AGENTS: NITROUS OXIDE.
12584 APTIC NO. 28919

NON-INDUSTRIAL EMISSION S

MERCURY IN THE ENVIRONMENT.
11992 APTIC NO. 29489

CONSIDERATIONS IN THE CONSTRUCTION OF LARGE REFUSE INCINERATORS.
12026 APTIC NO. 29547

PROBLEMS OF PUBLIC NUISANCE CAUSED BY BAD ODORS IN HYOGO PREFECTURE.
12029 APTIC NO. 29599

AMMONIA DISPOSAL--COKE PLANTS.
12012 APTIC NO. 29627

DESIGN OF NEW SILVER-RECOVERY INCINERATOR.
12008 APTIC NO. 29635

MARKET DEVELOPMENT IN GAS ECONOMY.
12010 APTIC NO. 29781

RECENT TREND AND PROBLEMS OF INDUSTRIAL WASTES TREATING EQUIPMENT.
12041 APTIC NO. 29827

THE REMOTE HEATING PLANT IN RECKLINGHAUSEN--A CONTRIBUTION TO THE PROTECTION OF THE ENVIRONMENT.
11990 APTIC NO. 29914

TREATMENT OF MUNICIPAL TRASH BY SANITATION TRUCK.
12049 APTIC NO. 29979

A NEW ENVIRONMENTAL POLLUTANT - POLYCHLORINATED BIPHENYLS (PCB).
12044 APTIC NO. 29984

CONTROL OF OIL-FIRED HEATERS, A MODERN COMMUNAL TASK.
12015 APTIC NO. 30100

FUEL VAPOR ADSORBING APPARATUS.
12103 APTIC NO. 27562

POLLUTION TECHNOLOGY--WHAT THEY RE DOING OVERSEAS.
12244 APTIC NO. 29650

DEVELOPMENT OF A METEOROLOGICALLY CONTROLLED AGRICULTURAL BURNING PROGRAM.
12058 APTIC NO. 29724

DEVELOPMENT OF GAS PURIFICATION INSTALLATIONS FOR ELECTRIC MELTING FURNACES.
12204 APTIC NO. 29740

POLLUTION CONTROL AT THE SAGAMIHARA PLANT OF OUR TOKYO MACHINERY WORKS.
12199 APTIC NO. 29821

ACTIVATED CARBON INDUSTRY AND PROBLEMS IN FUTURE - SPHERICAL ACTIVATED CARBON FROM COAL.
12235 APTIC NO. 29942

JOINT DEMONSTRATION OF METHODS FOR EXTINGUISHMENT AND CONTROL OF BURNING COAL REFUSE PILES. (FINAL REPORT).
12066 APTIC NO. 30057

AIR POLLUTION DERIVING FROM HEATING PLANTS AND INDUSTRIAL PROCESSES AND ITS CONTROL.
12229 APTIC NO. 30106

LOW POWER HOUSEHOLD OIL BURNING INSTALLATIONS. HOW THEY FUNCTION, PROPOSAL FOR A METHOD OF REGULATING THEM.
12079 APTIC NO. 30108

LOSS OF MERCURY FROM CHLORALKALI PLANTS.
12120 APTIC NO. 30117

LEAD SMELTING PLANT CONTROLS AIR EMISSIONS.
12069 APTIC NO. 30124

THE 3,4-BENZPYRENE CONTENT OF THE AIR IN TWO INDUSTRIAL AREAS.
12400 APTIC NO. 29586

TEN YEARS OF AIR POLLUTION IN HOKKAIDO.
12367 APTIC NO. 29727

MEASUREMENT OF ATMOSPHERIC LEVELS OF PESTICIDES.
12392 APTIC NO. 29812

POLLUTIONS AND TOKYO METROPOLITAN GOVERNMENT.
12365 APTIC NO. 29973

THE PREVENTION OF POLLUTION.
12416 APTIC NO. 29623

A FEW OBSERVATION ON THE GENERATION MECHANISM OF OBNOXIOUS ODOR.
12517 APTIC NO. 29649

ON HYGIENIC AND TOXICOLOGICAL PROBLEMS OF POLLUTION BY ARSENIC.
12534 APTIC NO. 29587

ITAI-ITAI (OUCH-OUCH) DISEASE AND CADMIUM POLLUTION IN JAPAN.
12581 APTIC NO. 29673

AIR POLLUTION BY TRACE METALS IN JAPAN.
12561 APTIC NO. 29816

EFFECT OF AIR AND WATER POLLUTION ON AGRICULTURAL PRODUCTS BY CD, PB, ZN ATTRIBUTED TO MINE REFINERY IN ANNAKA CITY, GUNMA PREFECTURE.
12601 APTIC NO. 27489

THE ECONOMIC IMPORTANCE OF HEAT RECOVERY FROM HOUSEHOLD REFUSE INCINERATORS.
12625 APTIC NO. 29992

THE PREVENTION OF POLLUTION. PART II-POLLUTION AND THE LAW.
12658 APTIC NO. 29474

ON THE BASIC LAW FOR ENVIRONMENTAL POLLUTION CONTROL, NOISE CONTROL LAW, WATER POLLUTION PREVENTION LAW, AND AIR POLLUTION PREVENTION LAW.
12670 APTIC NO. 29509

TOKYO FIGHTS POLLUTION. AN URGENT APPEAL FOR REFORM.
12653 APTIC NO. 29888

CHANGE IN POLLUTANTS AND FUTURE PROBLEMS.
12680 APTIC NO. 29743

ENVIRONMENT PRESERVATION - FROM THE ECOLOGICAL POINT OF VIEW.
12678 APTIC NO. 29961

NON-URBAN AREAS

BUS AND VEHICLE FOR TRANSPORTATION WITH ELECTRIC DRIVE.
11987 APTIC NO. 29517

MEASUREMENT OF ATMOSPHERIC LEVELS OF PESTICIDES.
12392 APTIC NO. 29812

POLLUTIONS AND TOKYO METROPOLITAN GOVERNMENT.
12365 APTIC NO. 29973

DISTRIBUTION OF POLLUTION AT SOME COUNTRY SITES.
12425 APTIC NO. 29582

ITAI-ITAI (OUCH-OUCH) DISEASE AND CADMIUM POLLUTION IN JAPAN.
12581 APTIC NO. 29673

EFFECTS OF SOOT AND SMOKE ON THE HEALTH OF SCHOOL CHILDREN.
12556 APTIC NO. 29791

THE STUDY OF THE POLLUTED AIR INFLUENCE ON CHILDREN S HEALTH IN RUHRDISTRICT.
12544 APTIC NO. 29899

STUDY ON THE EFFECTS OF AIR POLLUTION ON HUMAN BODY--WITH SPECIAL REFERENCE TO OBJECTIVE, COMPARATIVE STUDY OF ALL THE INHABITANTS BY CHEST X-RAY RINDINGS.
12554 APTIC NO. 29904

ATMOSPHERIC POLLUTIONS AND HEALTH.
12537 APTIC NO. 29971

CORROSION RATES OF MILD STEEL IN COASTAL, INDUSTRIAL, AND INLAND AREAS OF NORTHERN CALIFORNIA.
12620 APTIC NO. 28810

FEDERALISM MAKES ENVIRONMENTAL PROTECTION DIFFICULT.
12654 APTIC NO. 29969

NUCLEAR EXPLOSIONS

ESTIMATION OF VARIANCE OF AIR SAMPLER DATA BASED ON REPLICATE SAMPLES.
12314 APTIC NO. 29642

NUCLEAR POWER PLANTS

PRODUCTION OF GASES OF KNOWN SPECIFIC ACTIVITY IN A REACTOR FOR CALIBRATING GASEOUS EFFLUENT MONITORS.
12264 APTIC NO. 29848

SCAVENGING OF AEROSOL PARTICLES BY SPRAYS.
12437 APTIC NO. 29711

PROGRESS REPORT. JANUARY-DECEMBER 1969.
12555 APTIC NO. 28850

NUCLEATION

EXHAUST GAS CLEANER FOR DIESEL ENGINES.
12221 APTIC NO. 29533

ATMOSPHERIC POLLUTION. APPARATUS FOR MEASURING THE CONCENTRATION OF CONDENSATION NUCLEI IN THE ATMOSPHERE.
12267 APTIC NO. 30041

FORMATION OF FOG ON THE NUCLEI OF HUMIDITY CONDENSATION.
12453 APTIC NO. 29636

INTERACTIONS OF CLOUD CONDENSATION NUCLEI AND ICE NUCLEI WITH CLOUD AND PRECIPITATION ELEMENTS: A REVIEW.
12443 APTIC NO. 29692

INTERNATIONAL CONFERENCE ON CONDENSATION NUCLEI AND ICE-FORMING NUCLEI.
12454 APTIC NO. 29699

THERMAL-DIFFUSION CHAMBERS AS CLOUD-NUCLEI COUNTERS.
12452 APTIC NO. 29714

FORMATION OF PARTICLES BY PHOTOLYSIS AND RADIOLYSIS.
12407 APTIC NO. 29809

NYLON

THE INFLUENCE OF AIR POLLUTION UPON THE DISCOLORATION OF THE DYED STUFF AND THE DECREASE OF TENSILE STRENGTH OF SOME FIBERS.
12612 APTIC NO. 29717

STANDARD FADING CLOTHES FOR OXIDANTS.
12619 APTIC NO. 29866

O

OCEANS

THE PHYSIOLOGY OF CARBON MONOXIDE PRODUCTION BY DEEP-SEA COELENTERATES: CAUSES AND CONSEQUENCES.
12032 APTIC NO. 27292

CARBON MONOXIDE IN RAINWATER.
12460 APTIC NO. 29880

ATTACHMENT OF TRACE SUBSTANCES ON ATMOSPHERIC AEROSOLS.
12409 APTIC NO. 30046

CHEMICAL PROCESSES AT THE AIR-SEA INTERFACE: THE BEHAVIOR OF FLUORINE.
12468 APTIC NO. 30126

CORROSION RATES OF MILD STEEL IN COASTAL, INDUSTRIAL, AND INLAND AREAS OF NORTHERN CALIFORNIA.
12620 APTIC NO. 28810

NEW TREND IN POLLUTIONS COUNTERMEASURES IN THE 70 S.
12660 APTIC NO. 29507

ON THE BASIC LAW FOR ENVIRONMENTAL POLLUTION CONTROL, NOISE CONTROL LAW, WATER POLLUTION PREVENTION LAW, AND AIR POLLUTION PREVENTION LAW.
12670 APTIC NO. 29509

ODOR COUNTERACTION

PROBLEMS OF PUBLIC NUISANCE CAUSED BY BAD ODORS IN HYOGO PREFECTURE.
12029 APTIC NO. 29599

SOME PROBLEMS ON THE OFFENSIVE ODOR IN HYOGO PREFECTURE.
12030 APTIC NO. 29842

ONE ANSWER TO PLASTICIZER POLLUTION.
11991 APTIC NO. 30028

OXIDATION OF SODIUM SULFIDE AND MERCAPTIDE IN BLACK LIQUOR.
12071 APTIC NO. 29278

EXHAUST GAS CLEANER FOR DIESEL ENGINES.
12221 APTIC NO. 29533

ODOR TREATMENT AND ITS COST AT RENDERING FACTORIES.
12211 APTIC NO. 29601

PROBLEM OF OBNOXIOUS ODOR IN INDUSTRIAL POLLUTIONS.
12202 APTIC NO. 29745

ON PUBLIC NUISANCE BY, AND ENVIRONMENTAL HYGIENE OF, PAINT MANUFACTURING INDUSTRY.
12059 APTIC NO. 29761

ODOR CONTROL: ITS TIME IS COMING.
12114 APTIC NO. 29877

ON THE REACTIVITY OF AMINES WITH OZONE.
12190 APTIC NO. 29978

PULPERS APPLY ODOR CONTROL.
12104 APTIC NO. 30062

LEAD SMELTING PLANT CONTROLS AIR EMISSIONS.
12069 APTIC NO. 30124

METHODS FOR MEASURING AND EVALUATING ODOROUS AIR POLLUTANTS AT THE SOURCE AND IN THE AMBIENT AIR.
12246 APTIC NO. 29891

ODORIMETRY

A PROGRAM TO SAMPLE AND ANALYZE AIR POLLUTION IN THE VICINITY OF A CHEMICAL RECLAMATION PLANT.
12039 APTIC NO. 29698

ODOR CONTROL: ITS TIME IS COMING.
12114 APTIC NO. 29877

A FINDING CONCERNING A BASIC INVESTIGATION METHOD ON ODOR POLLUTION SEEN FROM ACTUAL EXPERIENCE. REPORT NO. 2 ON THE STUDIES OF OBNOXIOUS ODOR.
12294 APTIC NO. 29508

ON MEASUREMENT OF ODOR.
12256 APTIC NO. 29726

ENVIRONMENTAL POLLUTION AND ITS MEASUREMENTS (II).
12338 APTIC NO. 29843

AIR POLLUTION.
12324 APTIC NO. 29858

METHODS FOR MEASURING AND EVALUATING ODOROUS AIR POLLUTANTS AT THE SOURCE AND IN THE AMBIENT AIR.
12246 APTIC NO. 29891

STUDIES IN THE PSYCHOLOGY OF OLFACTION. (4). QUALITATIVE CLASSIFICATION OF ODORS.
12358 APTIC NO. 29929

A FEW OBSERVATION ON THE GENERATION MECHANISM OF OBNOXIOUS ODOR.
12517 APTIC NO. 29649

ODORS

PROBLEMS OF PUBLIC NUISANCE CAUSED BY BAD ODORS IN HYOGO PREFECTURE.
12029 APTIC NO. 29599

A PROGRAM TO SAMPLE AND ANALYZE AIR POLLUTION IN THE VICINITY OF A CHEMICAL RECLAMATION PLANT.
12039 APTIC NO. 29698

SOME PROBLEMS ON THE OFFENSIVE ODOR IN HYOGO PREFECTURE.
12030 APTIC NO. 29842

ODOR TREATMENT AND ITS COST AT RENDERING FACTORIES.
12211 APTIC NO. 29601

LAW-MAKERS SAY: CLEAN UP OR SHUT DOWN.
12055 APTIC NO. 29628

PROBLEM OF OBNOXIOUS ODOR IN INDUSTRIAL POLLUTIONS.
12202 APTIC NO. 29745

ON PUBLIC NUISANCE BY, AND ENVIRONMENTAL HYGIENE OF, PAINT MANUFACTURING INDUSTRY.
12059 APTIC NO. 29761

ODOR CONTROL: ITS TIME IS COMING.
12114 APTIC NO. 29877

ON THE REACTIVITY OF AMINES WITH OZONE.
12190 APTIC NO. 29978

ON MEASUREMENT OF ODOR.
12256 APTIC NO. 29726

METHODS FOR MEASURING AND EVALUATING ODOROUS AIR POLLUTANTS AT THE SOURCE AND IN THE AMBIENT AIR.
12246 APTIC NO. 29891

STUDIES IN THE PSYCHOLOGY OF OLFACTION. (4). QUALITATIVE CLASSIFICATION OF ODORS.
12358 APTIC NO. 29929

DETERMINATION AND EVALUATION OF LOW CONCENTRATIONS OF INDUSTRIAL AIR POLLUTANTS.
12309 APTIC NO. 30014

POLLUTIONS AND TOKYO METROPOLITAN GOVERNMENT.
12365 APTIC NO. 29973

A FEW OBSERVATION ON THE GENERATION MECHANISM OF OBNOXIOUS ODOR.
12517 APTIC NO. 29649

CHIBA PREFECTURAL ORDINANCE ON POLLUTIONS CONTROL AND ENFORCEMENT REGULATION OF ORDINANCE.
12649 APTIC NO. 29679

POLLUTIONS PREVENTION PLAN FOR CHIBA AND ICHIHARA CITIES IN CHIBA PREFECTURE.
12650 APTIC NO. 29813

CASTING WORK ENVIRONMENTS AND PUBLIC NUISANCE.
12655 APTIC NO. 29975

OHIO

GAS CHROMATOGRAPHY OF REACTIVE SULFUR GASES IN AIR AT THE PARTS- PER-BILLION LEVEL.
12347 APTIC NO. 30065

OIL BURNERS

CARBON MONOXIDE AS A COMBUSTION CONTROL PARAMETER.
12072 APTIC NO. 29471

EXPERIMENTS CONCERNING STOICHIOMETRIC COMBUSTION IN OIL-FIRED FURNACES OF FRENCH POWER PLANTS.
12090 APTIC NO. 29513

VENTILATION AND EXPLOSION EXPERIMENTS IN A WATER-TUBE BOILER OF A POWER PLANT.
12091 APTIC NO. 29514

MODERN OIL BURNING TECHNOLOGY AS DISPLAYED ON THE INTHERM IN STUTTGART AND THE 6.ISH IN FRANKFURT 1971.
12187 APTIC NO. 29824

TO PREVENT HEAVY OIL COMBUSTION GAS FROM PRODUCING BLACK SMOKE.
12213 APTIC NO. 29930

STUDIES ON AIR POLLUTION CONTROL BY ADDITIVE INJECTION. PART II - PREVENTION OF CLOGGING AT HIGH TEMPERATURE HEATING SURFACE OF BOILER BY ADDING MG(OH)2 POWDER.
12075 APTIC NO. 29941

THE PROBLEM OF INDUSTRIAL DUST: WAYS TO REGULATE ITS COLLECTION.
12099 APTIC NO. 29990

LOW POWER HOUSEHOLD OIL BURNING INSTALLATIONS. HOW THEY FUNCTION, PROPOSAL FOR A METHOD OF REGULATING THEM.
12079 APTIC NO. 30108

DETERMINATION OF THE SOOT INDEX IN WASTE GASES OF OIL BURNERS.
12257 APTIC NO. 29749

OIL RESOURCES

TODAY'S BASE OF EUROPEAN MINERAL OIL SUPPLY.
12004 APTIC NO. 28337

OLEFINS

PROBLEMS OF PUBLIC NUISANCE CAUSED BY BAD ODORS IN HYOGO PREFECTURE.
12029 APTIC NO. 29599

QUALITATIVE ANALYSIS OF EXHAUST GAS FROM FISH MEAL PLANT.
12028 APTIC NO. 29662

EXPERIMENTAL STUDY ON PLASTICS INCINERATION.
12017 APTIC NO. 29841

THE EFFECT OF CATALYST POISONS ON THE ACTIVITY OF CARBON MONOXIDE SHIFT CATALYSTS.
12212 APTIC NO. 29944

COMBUSTION OF WASTES CENTERING AROUND REMOVAL OF NOXIOUS GAS.
12077 APTIC NO. 29985

JIS ANALYTICAL PROCESS FOR NITROGEN OXIDES IN WASTE GAS.
12355 APTIC NO. 29677

STUDY OF POLYCYCLIC HYDROCARBONS FIXED ON ATMOSPHERIC DUSTS.
12270 APTIC NO. 29851

ANALYSIS OF HC OF LOW GRADE IN ATMOSPHERE.
12391 APTIC NO. 29482

ATMOSPHERIC REACTIONS AND SCAVENGING PROCESSES.
12426 APTIC NO. 29774

PHOTOCHEMICAL REACTIONS OF MOTOR VEHICLE EXHAUST GASES.
12402 APTIC NO. 29960

HETEROGENEOUS CATALYSIS INVOLVING ASTOICHIOMETRIC COMPONENTS. IV. INITIATION EFFECTS OF CARBON MONOXIDE AND OXYGEN OXIDE IN THE HYDROPOLYMERIZATION OF PROPENE AND ISOBUTENE.
12488 APTIC NO. 29871

PHOTOCHEMICAL REACTION BETWEEN SO2 AND ORGANIC COMPOUNDS (II).
12514 APTIC NO. 29967

THE REACTION KINETICS OF MERCAPTAN WITH OZONE IN THE PPM RANGE.
12497 APTIC NO. 30016

ETHYLENE PRODUCTION FROM OZONE INJURED PLANTS.
12596 APTIC NO. 30059

ABSCISSION: THE PHYTOGERONTOLOGICAL EFFECTS OF ETHYLENE.
12592 APTIC NO. 30060

OPEN BURNING

DEVELOPMENT OF A METEOROLOGICALLY CONTROLLED AGRICULTURAL BURNING PROGRAM.
12058 APTIC NO. 29724

JOINT DEMONSTRATION OF METHODS FOR EXTINGUISHMENT AND CONTROL OF BURNING COAL REFUSE PILES. (FINAL REPORT).
12066 APTIC NO. 30057

OPEN HEARTH FURNACES

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

REMOVAL OF BROWN FUME FROM WASTE GASES OF OPEN HEARTH FURNACE OXYGEN STEELMAKING PROCESS.
12194 APTIC NO. 29945

DETERMINATION OF A DOCTRINE FOR VALID SAMPLING.
12273 APTIC NO. 29560

POLLUTIONS AND TOKYO METROPOLITAN GOVERNMENT.
12365 APTIC NO. 29973

OPERATING CRITERIA

POLLUTION TESTS ON IDLING GASOLINE MOTORS.
12251 APTIC NO. 29765

OPERATING VARIABLES

AIR POLLUTION BY NITRIC OXIDE FROM FERTILIZER FACTORIES.
12051 APTIC NO. 29568

AMMONIA DISPOSAL--COKE PLANTS.
12012 APTIC NO. 29627

ATMOSPHERIC POLLUTION IN HEADINGS FOLLOWING SHOTFIRING.
12024 APTIC NO. 29678

EXPERIMENTAL STUDY ON PLASTICS INCINERATION.
12017 APTIC NO. 29841

STUDY OF THE COMBUSTION OF PARTLY PRE-MIXED LAMINAR NATURAL GAS FLAMES.
12021 APTIC NO. 29948

BASIC RESEARCH ON SMOKE DESULFURIZATION BY LIME-METALS, 2ND REPORT - EFFECT OF METAL ADDITION ON CALCINATION OF LIME.
12153 APTIC NO. 29080

OXIDATION OF SODIUM SULFIDE AND MERCAPTIDE IN BLACK LIQUOR.
12071 APTIC NO. 29278

REQUIEM FOR THE PISTON ENGINE? Machine Design, 42(19):20-22, 24-26, 31, 33-34, Aug. 6, 1970. 4 refs.
12226 APTIC NO. 29468

CARBON MONOXIDE AS A COMBUSTION CONTROL PARAMETER.
12072 APTIC NO. 29471

MODERN DUST CONTROL.
12217 APTIC NO. 29486

GULF RESIDUAL OIL HDS PROCESS.
12136 APTIC NO. 29501

AN EXPERIMENTAL STUDY ON THE PERFORMANCE OF A MULTIFUEL ENGINE. PART 3. AN ATTEMPT OF M-COMBUSTION APPLIED TO A SWIRL CHAMBER.
12183 APTIC NO. 29520

HEAT EXTRACTION AIDS DEPOLLUTION OF GASES AND WATER IN CHEVROLET FOUNDRY.
12097 APTIC NO. 29523

TRANSPORTATION EMISSIONS.
12175 APTIC NO. 29605

MODERN SULFURIC ACID TECHNOLOGY.
12093 APTIC NO. 29607

AIR POLLUTION: CONTROLLED OPERATION OF A NSSC RECOVERY FURNACE.
12127 APTIC NO. 29621

CYLINDER HEAD DESIGN.
12054 APTIC NO. 29624

FUTURE OF GASOLINE WITH LEAD ANTIKNOCKS.
12243 APTIC NO. 29625

EMISSION CONTROL BY EXHAUST MANIFOLD REACTOR--AN INITIAL STUDY FOR SMALL ENGINES.
12163 APTIC NO. 29629

ASPHALTENE HYDRODESULFURIZATION WITH SMALL CATALYST PARTICLES DISPOSED IN A GUARD CHAMBER-MAIN REACTOR SYSTEM.
12121 APTIC NO. 29719

PERFORMANCE OF CYCLONE FOR LOW-PRESSURE AIR FLOW.
12182 APTIC NO. 29728

SEPARATION OF CO2 AND H2S FROM GAS MIXTURES.
12086 APTIC NO. 29752

GASIFICATION OF HYDROCARBONS.
12137 APTIC NO. 29779

ADSORPTIVITY OF DESULFURIZING ACTIVATED CARBON FOR SULFUROUS ACID GAS (II) - EFFECT OF THE ADSORPTION - RINSING PROCESS ON THE ADSORPTIVITY.
12238 APTIC NO. 29788

MODERN OIL BURNING TECHNOLOGY AS DISPLAYED ON THE INTHERM IN STUTTGART AND THE 6.ISH IN FRANKFURT 1971.
12187 APTIC NO. 29824

AIR POLLUTION TEST METHODS COMPARED IN INCINERATOR EVALUATION PROGRAM.
12119 APTIC NO. 29837

PRINCIPLES OF COLLECTING PARTICULATES: DRY, WET OR ELECTROSTATICALLY.
12232 APTIC NO. 29838

EXPERIMENTAL RESEARCH ON LOW EXCESS AIR COMBUSTION IN BOILER BURNING HEAVY OIL ONLY.
12142 APTIC NO. 29860

CONTROL OF EXHAUST GAS EMISSION OF MITSUBISHI COLT GALANT.
12228 APTIC NO. 29901

EQUALIZATION OF PARTICLE TRANSFER IN TRANSFERABLE STRATUM.
12144 APTIC NO. 29928

ESSO/UNION FUEL OIL HYDRODESULFURIZATION PROCESSES. PART I: PROCESS APPLICATIONS AND DEVELOPMENT.
12180 APTIC NO. 29954

STUDY ON THE DESULFURIZATION OF FLUE GAS BY THE USE OF DRY LIME.
12198 APTIC NO. 29972

CATALYST FOR HEAVY OIL DESULFURIZATION.
12224 APTIC NO. 29977

COMBUSTION OF WASTES CENTERING AROUND REMOVAL OF NOXIOUS GAS.
12077 APTIC NO. 29985

REACTOR DEVICE FOR HEAVY OIL DESULFURIZATION.
12149 APTIC NO. 29987

STUDY ON THE DIRECT DESULFURIZATION OF HEAVY OIL.
12159 APTIC NO. 29989

ELECTROSTATIC FIELD BREAKDOWN PHENOMENA IN APPLYING CHARGED PARTICLES.
12236 APTIC NO. 30006

LAB TESTS SHOW ELECTRIC FIELD MIGHT HELP REDUCE ENGINE KNOCK.
12088 APTIC NO. 30036

PROCESS FOR REMOVING SULPHUR FROM GASES.
12139 APTIC NO. 30049

CONTROL OF POLLUTANT EMISSION AND SULPHURIC ACID CORROSION FROM COMBUSTION OF RESIDUAL FUEL OIL. PART I: LOW-PRESSURE

HEATING BOILERS WITH MECHANICAL ATOMIZING BURNERS.
12164 APTIC NO. 30055

FUME INCINERATION: EFFECTIVE, EFFICIENT.
12100 APTIC NO. 30077

FIRST RESULTS WITH THE M.A.N.-EXPERIMENTAL GAS TURBINE FOR COMMERCIAL VEHICLES.
12131 APTIC NO. 30088

THE SCRUBBING OF TAIL GAS FROM SULFURIC ACID PLANTS.
12067 APTIC NO. 30096

SUMMARY OF H2SO4 MANUFACTURE.
12068 APTIC NO. 30099

LOW POWER HOUSEHOLD OIL BURNING INSTALLATIONS. HOW THEY FUNCTION, PROPOSAL FOR A METHOD OF REGULATING THEM.
12079 APTIC NO. 30108

GRAVITATIONAL AND DRY CENTRIFUGAL COLLECTORS AND AIR POLLUTION CONTROL.
12095 APTIC NO. 30123

FOURIER TRANSFORM SPECTROMETERS.
12313 APTIC NO. 29476

INSTRUMENTS AND THEIR APPLICATIONS IN MASS SPECTROMETRY.
12261 APTIC NO. 29579

A COMPUTERIZED METHOD FOR SIZE CHARACTERIZATION OF ATMOSPHERIC AEROSOLS BY THE SCANNING ELECTRON MICROSCOPE.
12266 APTIC NO. 30019

ELECTROSTATIC FILTER USING DIELECTRIC FILTER MATERIAL.
12515 APTIC NO. 29596

HOW EMISSION CONTROL AFFECTS MELTING COSTS.
12628 APTIC NO. 29879

THE ECONOMIC IMPORTANCE OF HEAT RECOVERY FROM HOUSEHOLD REFUSE INCINERATORS.
12625 APTIC NO. 29992

UNLEADED GASOLINE AND SMOG-FREE AUTOS--HOW AND WHY.
12644 APTIC NO. 30035

OPINION SURVEYS

ON PUBLIC NUISANCE BY, AND ENVIRONMENTAL HYGIENE OF, PAINT MANUFACTURING INDUSTRY.
12059 APTIC NO. 29761

CASTING WORK ENVIRONMENTS AND PUBLIC NUISANCE.
12655 APTIC NO. 29975

ORGANIC ACIDS

PROBLEMS OF PUBLIC NUISANCE CAUSED BY BAD ODORS IN HYOGO PREFECTURE.
12029 APTIC NO. 29599

SOME PROBLEMS ON THE OFFENSIVE ODOR IN HYOGO PREFECTURE.
12030 APTIC NO. 29842

PLANTS AND POLLUTED AIR.
12230 APTIC NO. 30083

TFE-FLUOROCARBON FIBER FILTER BAGS--IT COSTS MORE TO GO FIRST CLASS.
12109 APTIC NO. 30121

SIMPLIFIED TECHNIQUES IN AIR POLLUTION MEASUREMENT.
12289 APTIC NO. 29771

A FEW OBSERVATION ON THE GENERATION MECHANISM OF OBNOXIOUS ODOR.
12517 APTIC NO. 29649

DETERMINATION OF THE DISPERSION OF SCATTERING NEAR THE CRITICAL POINT USING THE SCATTERED LIGHT INDICATRIX.
12499 APTIC NO. 30051

COLLECTION OF LEGISLATIONS RELATED WITH MITI CONCERNING POLLUTIONS.
12646 APTIC NO. 29504

ORGANIC NITROGEN COMPOUND

PROBLEMS OF PUBLIC NUISANCE CAUSED BY BAD ODORS IN HYOGO PREFECTURE.
12029 APTIC NO. 29599

SOME PROBLEMS ON THE OFFENSIVE ODOR IN HYOGO PREFECTURE.
12030 APTIC NO. 29842

PROBLEM OF OBNOXIOUS ODOR IN INDUSTRIAL POLLUTIONS.
12202 APTIC NO. 29745

CONTACT HYDRODESULFURIZATION OF PETROLEUM RESIDUAL OIL.
12200 APTIC NO. 29932

METHOD TO MANUFACTURE CATALYST FOR DESULFURIZATION BY HYDROGEN ADDITION OF LIQUID HYDROCARBON.
12234 APTIC NO. 29974

ON THE REACTIVITY OF AMINES WITH OZONE.
12190 APTIC NO. 29978

GASOLINE WITHOUT LEAD. TECHNICAL POSSIBILITIES FOR A NON-LEADED FUEL.
12084 APTIC NO. 30010

ON THE EFFECT OF ACCOMPANYING GASES IN QUANTITATIVE ANALYSIS OF HYDROGEN SULFIDE USING METHYLENE BLUE.
12343 APTIC NO. 29505

JIS ANALYTICAL PROCESS FOR NITROGEN OXIDES IN WASTE GAS.
12355 APTIC NO. 29677

ON MEASUREMENT OF ODOR.
12256 APTIC NO. 29726

ANALYSIS OF MONOETHANOLAMIN IN THE AIR.
12339 APTIC NO. 29970

A FEW OBSERVATION ON THE GENERATION MECHANISM OF OBNOXIOUS ODOR.
12517 APTIC NO. 29649

SIMULTANEOUS ABSORPTION OF TWO GASES ACCOMPANIED BY REVERSIBLE INSTANTANEOUS CHEMICAL REACTIONS.
12504 APTIC NO. 29917

SPECTROSCOPIC STUDIES OF PORPHYRINS, PHTHALOCYANINES, AND CS2 IN INERT MATRICES.
12471 APTIC NO. 30050

COLLECTION OF LEGISLATIONS RELATED WITH MITI CONCERNING POLLUTIONS.
12646 APTIC NO. 29504

ORGANIC PHOSPHORUS COMPOU

THE GAS CHROMATOGRAPHIC DETERMINATION OF PESTICIDES. (PART 3) DETERMINATION OF RESIDUES OF ORGANOPHOSPHORUS PESTICIDES.
12349 APTIC NO. 30134

ORGANIC SULFUR COMPOUNDS

PROBLEMS OF PUBLIC NUISANCE CAUSED BY BAD ODORS IN HYOGO PREFECTURE.
12029 APTIC NO. 29599

MERCURY IN MAN.
12011 APTIC NO. 29643

QUALITATIVE ANALYSIS OF EXHAUST GAS FROM FISH MEAL PLANT.
12028 APTIC NO. 29662

SOME PROBLEMS ON THE OFFENSIVE ODOR IN HYOGO PREFECTURE.
12030 APTIC NO. 29842

OXIDATION OF SODIUM SULFIDE AND MERCAPTIDE IN BLACK LIQUOR.
12071 APTIC NO. 29278

DESULFURIZATION OF LIQUEFIED PROPANE GAS. MOLECULAR SIEVE PROCESS.
12053 APTIC NO. 29617

PROBLEM OF OBNOXIOUS ODOR IN INDUSTRIAL POLLUTIONS.
12202 APTIC NO. 29745

CATALYST FOR HEAVY OIL DESULFURIZATION.
12224 APTIC NO. 29977

ON MEASUREMENT OF ODOR.
12256 APTIC NO. 29726

AUTOMATED ANALYSIS SYSTEMS MAKES KRAFT EMISSION MEASUREMENTS EASY.
12325 APTIC NO. 29913

GAS CHROMATOGRAPHY OF REACTIVE SULFUR GASES IN AIR AT THE PARTS- PER-BILLION LEVEL.
12347 APTIC NO. 30065

A FEW OBSERVATION ON THE GENERATION MECHANISM OF OBNOXIOUS ODOR.
12517 APTIC NO. 29649

METHANESULFENYL CHLORIDE. V. THE SPONTANEOUS DECOMPOSITION OF METHANESULFENYL CHLORIDE AND METHYLSULFUR TRICHLORIDE.
12485 APTIC NO. 29674

THE REACTION KINETICS OF MERCAPTAN WITH OZONE IN THE PPM RANGE.
12497 APTIC NO. 30016

PHOTOLYSIS OF THIOLANE VAPOR.
12478 APTIC NO. 30115

COLLECTION OF LEGISLATIONS RELATED WITH MITI CONCERNING POLLUTIONS.
12646 APTIC NO. 29504

ORGANIC WASTES

A FEW OBSERVATION ON THE GENERATION MECHANISM OF OBNOXIOUS ODOR.
12517 APTIC NO. 29649

ORGANOMETALLICS

MERCURY IN THE ENVIRONMENT.
11992 APTIC NO. 29409

PLANTS AND POLLUTED AIR.
12230 APTIC NO. 30083

STUDIES ON LEAD CHROMATE OBTAINED FROM TETRAALKYL LEAD IN LEADED GASOLINE. I. X-RAY DIFFRACTION TESTS OF THE LEAD CHROMATE CRYSTALS.
12296 APTIC NO. 29810

OXIDANTS

COUNTERMEASURES ON AUTOMOBILE EXHAUST GAS.
12050 APTIC NO. 29935

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

ON THE EFFECT OF ACCOMPANYING GASES IN QUANTITATIVE ANALYSIS OF HYDROGEN SULFIDE USING METHYLENE BLUE.
12343 APTIC NO. 29505

ON THE CONTINUOUS MEASUREMENT AND RECORDING OF OXIDANTS BY ELECTRIC CONDUCTIVITY METHOD.
12293 APTIC NO. 29758

ENVIRONMENTAL POLLUTION AND ITS MEASUREMENTS (II).
12338 APTIC NO. 29843

LEAD POLLUTION AND PHOTOCHEMICAL SMOG IN TOKYO.
12376 APTIC NO. 29647

EXPERIMENT ON PHOTOCHEMICAL REACTION OF MOTOR EXHAUST GAS.
12469 APTIC NO. 29500

PHOTOCHEMICAL SMOG.
12418 APTIC NO. 29672

AN EXPERIMENTAL STUDY OF PHOTOCHEMICAL OXIDATION OF ORGANIC SUBSTANCES IN THE ATMOSPHERE.
12441 APTIC NO. 29681

AIR POLLUTION OXIDANTS - THEIR EFFECTS ON METABOLIC PROCESSES IN PLANTS.
12598 APTIC NO. 29524

STANDARD FADING CLOTHES FOR OXIDANTS.
12619 APTIC NO. 29866

THE EVOLUTION OF AIR POLLUTION CONTROL LAWS.
12672 APTIC NO. 30020

OXIDATION

NOMOGRAPH GIVES NO OXIDATION.
11993 APTIC NO. 27535

JET AIRCRAFT AIR POLLUTANT PRODUCTION AND DISPERSION.
12016 APTIC NO. 30130

METHOD TO REMOVE HARMFUL SUBSTANCES FROM STACK GAS BY-PRODUCING AMMONIUM SULFATE AND OTHERS (XV) - ACTIVATION ENERGY OF ACTIVATED CARBON FOR SO2 ADSORPTION.
12161 APTIC NO. 29648

DESULFURIZATION OF EXHAUST GAS.
12078 APTIC NO. 29927

ACTIVATED CARBON INDUSTRY AND PROBLEMS IN FUTURE - SPHERICAL ACTIVATED CARBON FROM COAL.
12235 APTIC NO. 29942

ON THE REACTIVITY OF AMINES WITH OZONE.
12190 APTIC NO. 29978

OXIDATION OF NITROGEN MONOXIDE.
12320 APTIC NO. 29676

JIS ANALYTICAL PROCESS FOR NITROGEN OXIDES IN WASTE GAS.
12355 APTIC NO. 29677

ANALYSIS OF MONOETHANOLAMIN IN THE AIR.
12339 APTIC NO. 29970

THE GAS CHROMATOGRAPHIC DETERMINATION OF PESTICIDES. (PART 3) DETERMINATION OF RESIDUES OF ORGANOPHOSPHORUS PESTICIDES.
12349 APTIC NO. 30134

EXPLOSIVE OXIDATION OF NITROUS OXIDE MIXED WITH OZONE.
12511 APTIC NO. 27268

IGNITION KINTICS IN HIGH-TEMPERATURE OXIDATION WITH NITROUS OXIDE IN SHOCK WAVES.
12509 APTIC NO. 29095

CHEMICAL APPLICATIONS OF METASTABLE ARGON ATMOS.
12519 APTIC NO. 29632

A FEW OBSERVATION ON THE GENERATION MECHANISM OF OBNOXIOUS ODOR.
12517 APTIC NO. 29649

THE REACTION OF OZONE WITH SOLID POLYSTYRENE.
12505 APTIC NO. 29666

METHOD OF CALCULATING EQUILIBRIUM COMPOSITIONS IN INTERACTION OF NITROGEN OXIDES WITH NITRIC ACID SOLUTIONS.
12470 APTIC NO. 29800

THE STUDY OF THE REACTION OF HYDROGEN SULPHIDE WITH ATOMIC OXYGEN USING EMISSION SPECTRUM.
12516 APTIC NO. 29884

THE MECHANISM OF ATMOSPHERIC RUSTING AND THE EFFECT OF CU AND P ON THE RUST FORMATION OF LOW ALLOY STEELS.
12615 APTIC NO. 29631

COMPLEX ALKALI IRON SULFATES A CONTRIBUTION TO THE THERMODYNAMICS OF FIRESDIDE HIGH-TEMPERATURE CORROSION.
12616 APTIC NO. 29783

OXIDATION STUDY ON ATMOSPHERIC AGING OF POLYMERS.
12622 APTIC NO. 29826

USING TITANIUM IN THE CHEMICAL PLANT.
12610 APTIC NO. 29857

EFFECT OF LOW SILICIUM CONTENT AND SOME SURFACE TREATMENT ON THE OXIDATION OF CARBON STEELS IN CARBON DIOXIDE ATMOSPHERES AT MEDIUM TEMPERATURES.
12611 APTIC NO. 29995

OXYGEN

THE CALCULATION OF MIXED HYDROCARBON-OXYGENATED SOLVENT EVAPORATION.
12038 APTIC NO. 29526

QUALITATIVE ANALYSIS OF EXHAUST GAS FROM FISH MEAL PLANT.
12028 APTIC NO. 29662

EXPERIMENTAL STUDY ON PLASTICS INCINERATION.
12017 APTIC NO. 29841

OXIDATION OF SODIUM SULFIDE AND MERCAPTIDE IN BLACK LIQUOR.
12071 APTIC NO. 29278

EXPERIMENTS CONCERNING STOICHIOMETRIC COMBUSTION IN OIL-FIRED FURNACES OF FRENCH POWER PLANTS.
12090 APTIC NO. 29513

METHOD TO REMOVE HARMFUL SUBSTANCES FROM STACK GAS BY-PRODUCING AMMONIUM SULFATE AND OTHERS (XV) - ACTIVATION ENERGY OF ACTIVATED CARBON FOR SO2 ADSORPTION.
12161 APTIC NO. 29648

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

CALCULATION OF EXCESS AIR FOR COMBUSTION PROCESSES USING O2-TO-N2 RATIO.
12176 APTIC NO. 29796

EXPERIMENTAL RESEARCH ON LOW EXCESS AIR COMBUSTION IN BOILER BURNING HEAVY OIL ONLY.
12142 APTIC NO. 29860

DESULFURIZATION OF EXHAUST GAS.
12078 APTIC NO. 29927

CONTACT HYDRODESULFURIZATION OF PETROLEUM RESIDUAL OIL.
12200 APTIC NO. 29932

ACTIVATED CARBON INDUSTRY AND PROBLEMS IN FUTURE - SPHERICAL ACTIVATED CARBON FROM COAL.
12235 APTIC NO. 29942

METHOD TO MANUFACTURE CATALYST FOR DESULFURIZATION BY HYDROGEN ADDITION OF LIQUID HYDROCARBON.
12234 APTIC NO. 29974

JIS ANALYTICAL PROCESS FOR NITROGEN OXIDES IN WASTE GAS.
12355 APTIC NO. 29677

FRACTIONATION OF OXYGEN ISOTOPES BETWEEN NO AND H2O.
12297 APTIC NO. 30114

SOME ASPECTS OF THE METAL ION CHEMISTRY OF THE EARTH'S ATMOSPHERE.
12421 APTIC NO. 28891

AN EXPERIMENTAL STUDY OF PHOTOCHEMICAL OXIDATION OF ORGANIC SUBSTANCES IN THE ATMOSPHERE.
12441 APTIC NO. 29681

ATMOSPHERIC REACTIONS AND SCAVENGING PROCESSES.
12426 APTIC NO. 29774

PHOTOCHEMICAL SMOG AND ITS REACTION MECHANISM.
12459 APTIC NO. 29934

MECHANISM OF SINGLET MOLECULAR OXYGEN FORMATION FROM PHOTOLYSIS OF OZONE AT 2537 A.
12424 APTIC NO. 30110

IGNITION KINTICS IN HIGH-TEMPERATURE OXIDATION WITH NITROUS OXIDE IN SHOCK WAVES.
12509 APTIC NO. 29095

STUDIES ON PHOTOLYSIS OF NITORGEN OXIDE.
12513 APTIC NO. 29527

INVESTIGATION OF NITRIC OXIDE FORMATION KINETICS IN COMBUSTION PROCESSES: THE HYDROGEN-OXYGEN-NITROGEN REACTION.
12477 APTIC NO. 29610

QUENCHING OF NAPHTHALENE LUMINESCENCE BY OXYGEN AND NITRIC OXIDE.
12495 APTIC NO. 29611

INITIATION RATE FOR SHOCK-HEATED HYDROGEN.OXYGEN CARBON MONOXIDE- ARGON MIXTURES AS DETERMINED BY OH INDUCTION TIME MEASUREMENTS.
12490 APTIC NO. 29700

THE ULTRA-VIOLET PHOTOLYSIS OF OZONE IN THE PRESENCE OF MOLECULAR OXYGEN.
12500 APTIC NO. 29778

HETEROGENEOUS CATALYSIS INVOLVING ASTOICHIOMETRIC COMPONENTS. IV. INITIATION EFFECTS OF CARBON MONOXIDE AND OXYGEN OXIDE IN THE HYDROPOLYMERIZATION OF PROPENE AND ISOBUTENE.
12488 APTIC NO. 29871

OXYGEN AFFINITY AND ACID-BASE STATUS OF HUMAN BLOOD DURING EXPOSURE TO HYPOXIA AND CARBON MONOXIDE.
12567 APTIC NO. 29528

CHEMISTRY OF SINGLET OXYGEN. X. CAROTENOID QUENCHING PARALLELS BIOLOGICAL PROTECTION.
12546 APTIC NO. 29716

CAN ANYTHING BE DONE FOR EMPHYSEMA? J. Louisiana State Med. Soc., 122(7):216-218, July 1970. 18 refs.
12579 APTIC NO. 30137

CORROSION OF NACL-CONTAMINATED FE IN HUMID ATMOSPHERE OF LOW O2 CONTENT.
12621 APTIC NO. 30112

OXYGEN CONSUMPTION

THE PHYSIOLOGY OF CARBON MONOXIDE PRODUCTION BY DEEP-SEA COELENTERATES: CAUSES AND CONSEQUENCES.
12032 APTIC NO. 27292

SOME PLANS FOR FUTURE STUDIES FOR LOW LEVEL OF LEAD ON THE HUMAN BEING.
12553 APTIC NO. 29815

OXYGEN LANCING

DEVELOPMENT OF GAS PURIFICATION INSTALLATIONS FOR ELECTRIC MELTING FURNACES.
12204 APTIC NO. 29740

REMOVAL OF BROWN FUME FROM WASTE GASES OF OPEN HEARTH FURNACE OXYGEN STEELMAKING PROCESS.
12194 APTIC NO. 29945

THE COSTS FOR MAINTENANCE OF CLEAN AIR. THE INFLUENCE OF SOCIAL COSTS ON THE SELECTION OF AN INDUSTRIAL SITE.
12633 APTIC NO. 29923

OZONE

ODOR TREATMENT AND ITS COST AT RENDERING FACTORIES.
12211 APTIC NO. 29601

ON THE REACTIVITY OF AMINES WITH OZONE.
12190 APTIC NO. 29978

PLANTS AND POLLUTED AIR.
12230 APTIC NO. 30083

ON THE EFFECT OF ACCOMPANYING GASES IN QUANTITATIVE ANALYSIS OF HYDROGEN SULFIDE USING METHYLENE BLUE.
12343 APTIC NO. 29505

MEASURING METHOD OF OZONE BY CHEMILUMINECENCE.
12337 APTIC NO. 29665

AN AUTOMATIC COULOMETRIC ANALYZER OF OZONE IN THE ATMOSPHERE.
12274 APTIC NO. 29757

SIMPLIFIED TECENIQUES IN AIR POLLUTION MEASUREMENT.
12289 APTIC NO. 29771

STUDIES IN INDOOR SWIMMING POOLS WITH OZONIZATION PLANTS.
12353 APTIC NO. 29999

CALCULATION METHODS OF SPECTRAL ABSORPTION OF INFRARED RADIATION BY ATMOSPHERIC GASES.
12323 APTIC NO. 30103

POSSIBLE CORRELATION BETWEEN ATMOSPHERIC OZONE CONTENT AND COSMIC RAY INTENSITY VARIATIONS.
12369 APTIC NO. 30031

PROBLEMS OF AIR POLLUTION AND MEASURES TO COMBAT IT IN EL PASO, TEXAS.
12368 APTIC NO. 30094

SOME ASPECTS OF THE METAL ION CHEMISTRY OF THE EARTH'S ATMOSPHERE.
12421 APTIC NO. 28891

PHOTOCHEMICAL SMOG.
12418 APTIC NO. 29672

AN EXPERIMENTAL STUDY OF PHOTOCHEMICAL OXIDATION OF ORGANIC SUBSTANCES IN THE ATMOSPHERE.
12441 APTIC NO. 29681

ATMOSPHERIC REACTIONS AND SCAVENGING PROCESSES.
12426 APTIC NO. 29774

EFFECT OF THE TEMPERATURE DEPENDENCE OF OZONE ABSORPTION ON VERTICAL OZONE DISTRIBUTIONS DEDUCED FROM UMKEHR OBSERVATIONS.
12415 APTIC NO. 29875

PHOTOCHEMICAL SMOG AND ITS REACTION MECHANISM.
12459 APTIC NO. 29934

THE ULTRA-VIOLET PHOTOLYSIS OF OZONE IN THE PRESENCE OF WATER VAPOUR.
12435 APTIC NO. 30012

MECHANISM OF SINGLET MOLECULAR OXYGEN FORMATION FROM PHOTOLYSIS OF OZONE AT 2537 A.
12424 APTIC NO. 30110

EXPLOSIVE OXIDATION OF NITROUS OXIDE MIXED WITH OZONE.
12511 APTIC NO. 27268

THE REACTION OF OZONE WITH SOLID POLYSTYRENE.
12505 APTIC NO. 29666

THE ULTRA-VIOLET PHOTOLYSIS OF OZONE IN THE PRESENCE OF MOLECULAR OXYGEN.
12500 APTIC NO. 29778

THE REACTION KINETICS OF MERCAPTAN WITH OZONE IN THE PPM RANGE.
12497 APTIC NO. 30016

AIR POLLUTION OXIDANTS - THEIR EFFECTS ON METABOLIC PROCESSES IN PLANTS.
12598 APTIC NO. 29524

ON COMPOSITE HARM TO PLANTS BY SULFUROUS ACID GAS AND OXIDANT.
12604 APTIC NO. 29671

OZONE AND AIR IONS ACCOMPANYING BIOLOGICAL APPLICATIONS OF ELECTRIC FIELDS.
12594 APTIC NO. 29897

ETHYLENE PRODUCTION FROM OZONE INJURED PLANTS.
12596 APTIC NO. 30059

DEGRADATION OF POLYMERS IN REACTIVE GASES.
12617 APTIC NO. 29472

STANDARD FADING CLOTHES FOR OXIDANTS.
12619 APTIC NO. 29866

MATERIALS FOR REFERENCE ABOUT ENVIRONMENTAL POLLUTION CONTROL.
12651 APTIC NO. 29818

P

PAINT MANUFACTURING

THE CALCULATION OF MIXED HYDROCARBON-OXYGENATED SOLVENT EVAPORATION.
12038 APTIC NO. 29526

ON PUBLIC NUISANCE BY, AND ENVIRONMENTAL HYGIENE OF, PAINT MANUFACTURING INDUSTRY.
12059 APTIC NO. 29761

PROCEEDINGS OF THE 9TH CONFERENCE OF JAPAN ASSOCIATION OF INDUSTRIAL HEALTH.
12526 APTIC NO. 29963

PAINTS

THE CALCULATION OF MIXED HYDROCARBON-OXYGENATED SOLVENT EVAPORATION.
12038 APTIC NO. 29526

PAPER CHROMATOGRAPHY

THE INFLUENCE OF AIR POLLUTION UPON THE DISCOLORATION OF THE DYED STUFF AND THE DECREASE OF TENSILE STRENGTH OF SOME FIBERS.
12612 APTIC NO. 29717

PAPER MANUFACTURING

MERCURY IN THE ENVIRONMENT.
11992 APTIC NO. 29489

POLLUTION TECHNOLOGY--WHAT THEY RE DOING OVERSEAS.
12244 APTIC NO. 29650

PARIS

AIR POLLUTION IN AN URBAN ENVIRONMENT.
12413 APTIC NO. 30045

PARTICLE COUNTERS

PARTICLE SIZE MEASURING WITH THE TELEVISION MICROSCOPE QUANTIMET FOR SIZES MINUS 4 MICRONS.
12304 APTIC NO. 29512

ATMOSPHERIC POLLUTION. APPARATUS FOR MEASURING THE CONCENTRATION OF CONDENSATION NUCLEI IN THE ATMOSPHERE.
12267 APTIC NO. 30041

THERMAL-DIFFUSION CHAMBERS AS CLOUD-NUCLEI COUNTERS.
12452 APTIC NO. 29714

ATMOSPHERIC POLLUTANTS FRENCH LEGISLATION. STANDARD MEASURING METHODS. RECENT COMMERCIAL APPARATUS.
12638 APTIC NO. 29003

PARTICLE GROWTH

ATMOSPHERIC POLLUTION. APPARATUS FOR MEASURING THE CONCENTRATION OF CONDENSATION NUCLEI IN THE ATMOSPHERE.
12267 APTIC NO. 30041

INTERNATIONAL CONFERENCE ON CONDENSATION NUCLEI AND ICE-FORMING NUCLEI.
12454 APTIC NO. 29699

THERMAL-DIFFUSION CHAMBERS AS CLOUD-NUCLEI COUNTERS.
12452 APTIC NO. 29714

PARTICLE AND DEUTERIUM CONTENT IN SNOW.
12449 APTIC NO. 29775

FORMATION OF PARTICLES BY PHOTOLYSIS AND RADIOLYSIS.
12407 APTIC NO. 29809

THE STUDY OF THE EVOLUTION OF ATOMIC SIZED PARTICLES IN THE AIR.
12436 APTIC NO. 29946

ATTACHMENT OF TRACE SUBSTANCES ON ATMOSPHERIC AEROSOLS.
12409 APTIC NO. 30046

SOME OBSERVATIONS ON THE ABNORMAL AGGLOMERATION OF CARBON BLACK AND OF GRAPHITE POWDER.
12506 APTIC NO. 29548

COAGULATION OF DUST PARTICLES, IN PARTICULAR BY AEROSOLS OF SEA WATER SALT.
ERROR

OBSERVATIONS ON THE FIGHT AGAINST DUST BY MEANS OF SALINE AEROSOLS.
12475 APTIC NO. 29551

KINETICS OF THE REACTION BETWEEN THE SOLID SODIUM CARBONATE AND THE GASEOUS SULPHUR DIOXIDE. VI. STATISTICAL MOLECULAR MODEL OF THE EXCESS KINETIC FUNCTION.
12487 APTIC NO. 29702

APPROXIMATE SOLUTION OF THE EQUATIONS FOR AEROSOL AGGLOMERATION.
12483 APTIC NO. 30111

PARTICLE SHAPE

MANUFACTURING OF INDUSTRIAL CATALYST COMPRISING ALUMINA AS CARRIER. (Arumina o tantai to shita kogyo shokubai no seizo). Text in Japanese. Preprint, Japan Industrial Technology Assoc., Tokyo, 12p., 1970. 5 refs. (Presented at the Industrial Catalyst Seminar Tokyo, Japan, Nov. 9, 1970.)
12158 APTIC NO. 29755

ACTIVATED CARBON INDUSTRY AND PROBLEMS IN FUTURE - SPHERICAL ACTIVATED CARBON FROM COAL.
12235 APTIC NO. 29942

THE PROBLEM OF INDUSTRIAL DUST: WAYS TO REGULATE ITS COLLECTION.
12099 APTIC NO. 29990

PARTICLE SIZE MEASURING WITH THE TELEVISION MICROSCOPE QUANTIMET FOR SIZES MINUS 4 MICRONS.
12304 APTIC NO. 29512

A CONVENIENT METHOD FOR APPLYING A SUPPORTING FILM TO GRIDS USED ON WALKENHORST THERMAL PRECIPITATOR PLUGS.
12250 APTIC NO. 30116

ON THE DEPOSITION OF MATTER ON SPHERICAL AEROSOL PARTICLES IN THE RANGE OF INTERMEDIATE KNUDSEN NUMBERS.
12405 APTIC NO. 29667

SCAVENGING BY SNOW AND ICE CRYSTALS.
12456 APTIC NO. 29707

CONTINUOUS CHARGED CLOUD-PARTICLE SAMPLER.
12451 APTIC NO. 29712

SOME OBSERVATIONS ON THE ABNORMAL AGGLOMERATION OF CARBON BLACK AND OF GRAPHITE POWDER.
12506 APTIC NO. 29548

SHAPE FACTORS FOR AIRBORNE PARTICLES.
12503 APTIC NO. 30085

PARTICLE SIZE

DETERMINATION OF LEAD CONTENTS IN AUTOMOBILE EXHAUST GAS.
12013 APTIC NO. 29661

STUDY ON MECHANISM OF REACTION WITH SULFUR DIOXIDE OF LIMESTONE POWDER BLOWN INTO COMBUSTION GAS.
12146 APTIC NO. 29479

EXHAUST GAS CLEANER FOR DIESEL ENGINES.
12221 APTIC NO. 29533

OBSERVATIONS ON THE ELIMINATION OF DUST.
12143 APTIC NO. 29554

COLLECTION EFFICIENCIES OF GLASS FIBER FILTERS FOR EACH SIZE OF LEAD AEROSOLS.
12140 APTIC NO. 29664

ASPHALTENE HYDRODESULFURIZATION WITH SMALL CATALYST PARTICLES DISPOSED IN A GUARD CHAMBER-MAIN REACTOR SYSTEM.
12121 APTIC NO. 29719

FILTRATION OF MULTI-DISPERSING AEROSOL UNDER THE FORCE OF GRAVITY.
12115 APTIC NO. 29730

ELECTROSTATIC PRECIPITATORS FOR CEMENT AND LIME INDUSTRY.
12169 APTIC NO. 29735

DEVELOPMENT OF GAS PURIFICATION INSTALLATIONS FOR ELECTRIC MELTING FURNACES.
12204 APTIC NO. 29740

MANUFACTURING OF INDUSTRIAL CATALYST COMPRISING ALUMINA AS CARRIER. (Arumina o tantai to shita kogyo shokubai no seizo). Text in Japanese. Preprint, Japan Industrial Technology Assoc., Tokyo, 12p., 1970. 5 refs. (Presented at the Industrial Catalyst Seminar Tokyo, Japan, Nov. 9, 1970.)
12158 APTIC NO. 29755

EFFICIENCY OF FILTERS FOR RADIOACTIVE AEROSOL.
12155 APTIC NO. 29768

AIR POLLUTION TEST METHODS COMPARED IN INCINERATOR EVALUATION PROGRAM.
12119 APTIC NO. 29837

PRINCIPLES OF COLLECTING PARTICULATES: DRY, WET OR ELECTROSTATICALLY.
12232 APTIC NO. 29838

PERFORMANCE OF CHARCOAL-IMPREGNATED FILTER PAPER TYPE CP-20 FOR COLLECTING AIRBORNE RADIOIODINE.
12185 APTIC NO. 29870

INVESTIGATION OF HEAVY OIL DESULFURIZATION IN FIXED-BED CONTACT REACTORS.
12196 APTIC NO. 29931

ACTIVATED CARBON INDUSTRY AND PROBLEMS IN FUTURE - SPHERICAL ACTIVATED CARBON FROM COAL.
12235 APTIC NO. 29942

THE PROBLEM OF INDUSTRIAL DUST: WAYS TO REGULATE ITS COLLECTION.
12099 APTIC NO. 29990

ELECTROSTATIC FIELD BREAKDOWN PHENOMENA IN APPLYING CHARGED PARTICLES.
12236 APTIC NO. 30006

GRAVITATIONAL AND DRY CENTRIFUGAL COLLECTORS AND AIR POLLUTION CONTROL.
12095 APTIC NO. 30123

EXPERIMENTAL INVESTIGATION OF THE PROCESS OF CENTRIFUGAL DUST SEPARATION.
12245 APTIC NO. 30133

REVIEW OF CASCADE IMPACTORS FOR PARTICLE SIZE ANALYSIS AND A NEW CALIBRATION FOR THE CASELLA CASCADE IMPACTOR.
12311 APTIC NO. 29270

THEORETICAL CONSIDERATION IN THE MEASUREMENT OF SMOKE PARTICLES BY OWL (II) - EFFECT OF DISPERSION.
12298 APTIC NO. 29483

COMPARISON OF VARIOUS METHODS OF DETERMINING QUARTZ CONTENT IN NOXIOUS DUST.
12263 APTIC NO. 29546

THE IMPORTANCE OF AGGREGATION PHENOMENA IN THE QUANTITATIVE ESTIMATE OF DUST IN THE AIR.
12354 APTIC NO. 29549

THE IRRITANT POTENTIAL OF POLLUTANTS IN THE ATMOSPHERE.
12271 APTIC NO. 29751

POROUS ANALYTICAL FILTERS AND THEIR USE IN AIR HYGIENE.
12346 APTIC NO. 29784

PARTICLE SIZE DISTRIBUTION IN AEROSOLS FORMED FROM GASEOUS REACTANTS.
12268 APTIC NO. 29854

MEASUREMENTS OF AIRBORNE DUST.
12288 APTIC NO. 29885

A COMPUTERIZED METHOD FOR SIZE CHARACTERIZATION OF ATMOSPHERIC AEROSOLS BY THE SCANNING ELECTRON MICROSCOPE.
12266 APTIC NO. 30019

PHOTON DETECTION OF LIGHT DIFFUSION WITH ULTRAFINE AEROSOLS.
12351 APTIC NO. 30038

A CONVENIENT METHOD FOR APPLYING A SUPPORTING FILM TO GRIDS USED ON WALKENHORST THERMAL PRECIPITATOR PLUGS.
12250 APTIC NO. 30116

SOURCE SAMPLING OF ATMOSPHERIC CONTAMINANTS.
12248 APTIC NO. 30118

TENTATIVE METHOD OF ANALYSIS FOR DUSTFALL FROM THE ATMOSPHERE.
12344 APTIC NO. 30119

TESTS OF REPRESENTATIVE SPECIMENS OF CRYSTALLINE SILICA CONTAINED IN THE ATMOSPHERE OF INDUSTRIAL PLANTS.
12370 APTIC NO. 29553

POLLUTIONS AND TOKYO METROPOLITAN GOVERNMENT.
12365 APTIC NO. 29973

MICROSTRUCTURE OF ATMOSPHERIC SURFACE LAYER AEROSOLS.
12433 APTIC NO. 29668

COLLECTION EFFICIENCY OF WATER DROPLETS IN AGCL AEROSOL.
12430 APTIC NO. 29687

SCAVENGING IN PERSPECTIVE.
12422 APTIC NO. 29688

PRIORITIES IN SCAVENGING RESEARCH.
12419 APTIC NO. 29689

SCAVENGING BY SNOW AND ICE CRYSTALS.
12456 APTIC NO. 29707

SCAVENGING OF SOLUBLE DYE PARTICLES BY RAIN.
12414 APTIC NO. 29708

COLLECTION EFFICIENCIES OF RAINDROPS FOR SUBMICRON PARTICULATES.
12404 APTIC NO. 29709

COLLECTION EFFICIENCY IN WASHOUT BY RAIN.
12406 APTIC NO. 29710

CONTINUOUS CHARGED CLOUD-PARTICLE SAMPLER.
12451 APTIC NO. 29712

ATMOSPHERIC DISPERSION OF STACK EFFLUENTS.
12458 APTIC NO. 29773

PARTICLE AND DEUTERIUM CONTENT IN SNOW.
12449 APTIC NO. 29775

THERMODYNAMICS OF THE AEROSOLS IN THE ATMOSPHERE.
12428 APTIC NO. 29785

THE STUDY OF THE EVOLUTION OF ATOMIC SIZED PARTICLES IN THE AIR.
12436 APTIC NO. 29946

ATTACHMENT OF TRACE SUBSTANCES ON ATMOSPHERIC AEROSOLS.
12409 APTIC NO. 30046

ON PLUMBIC POLLUTION OF MUNICIPAL ATMOSPHERE--BEHAVIORS OF PLUMBIC COMPOUND AS AEROSOL.
12431 APTIC NO. 30073

A METHOD OF VERIFYING THE COEFFICIENTS A-SUB-N AND B-SUB-N OF THE MIE THEORY OF LIGHT SCATTERING BY NONABSORBING ISOTROPIC SPHERES.
12492 APTIC NO. 29488

SOME OBSERVATIONS ON THE ABNORMAL AGGLOMERATION OF CARBON BLACK AND OF GRAPHITE POWDER.
12506 APTIC NO. 29548

COAGULATION OF DUST PARTICLES, IN PARTICULAR BY AEROSOLS OF SEA WATER SALT.
ERROR

OBSERVATIONS ON THE FIGHT AGAINST DUST BY MEANS OF SALINE AEROSOLS.
12475 APTIC NO. 29551

A NEW DUST-GENERATING SYSTEM FOR INHALATION STUDIES.
12486 APTIC NO. 29653

ON ADHESION OF SMOKE MIST PARTICULATES FLOWING THROUGH BETWEEN PLAN PARALLEL PLATES.
12518 APTIC NO. 29729

DEPOSITION OF LIQUID OR SOLID DISPERSIONS FROM TURBULENT GAS STREAMS: A STOCHASTIC MODEL.
12494 APTIC NO. 29873

ADHESION TO PIPE S WALL WITH AEROSOL PARTICLES FLOWING IN A PIPE AS TURBULENT FLOW.
12523 APTIC NO. 30071

SHAPE FACTORS FOR AIRBORNE PARTICLES.
12503 APTIC NO. 30085

APPROXIMATE SOLUTION OF THE EQUATIONS FOR AEROSOL AGGLOMERATION.
12483 APTIC NO. 30111

LEAD IN THE ENVIRONMENT.
12564 APTIC NO. 29493

A CONTRIBUTION TO THE EVALUATION OF THE RISK OF SILICOSIS.
12549 APTIC NO. 29558

CHART FOR EVALUATION OF THE RISK OF SILICOSIS.
12542 APTIC NO. 29559

TWO OBSERVATIONS IN A FLUORSPAR QUARRY.
12535 APTIC NO. 29565

ADDITION OF LEAD TO FUEL - HARMFUL OR DANGEROUS? (Bleizusaetze im Kraftstoff - harmlos oder gefaehrlich)? Text in German. VDI (Ver. Deut. Ingr.) Nachr. (Berlin), 25(9):6, 1971.
12527 APTIC NO. 30000

MEASUREMENT OF GASEOUS AND PARTICULATE FLUORINE EMISSIONS.
12322 APTIC NO. 29738

PIEZOLECTRIC-ELECTROSTATIC AEROSOL MASS CONCENTRATION MONITOR.
12331 APTIC NO. 30061

A CONVENIENT METHOD FOR APPLYING A SUPPORTING FILM TO GRIDS USED ON WALKENHORST THERMAL PRECIPITATOR PLUGS.
12250 APTIC NO. 30116

TENTATIVE METHOD OF ANALYSIS FOR DUSTFALL FROM THE ATMOSPHERE.
12344 APTIC NO. 30119

PARTICULATES (SEE; SUSPENDED PARTICULATES; DUSTS; SEA SALTS; SOOT; & SPRAYS

PATHOLOGICAL TECHNIQUES

PULMONARY COMPLICATIONS OF ASBESTOS EXPOSURE.
12552 APTIC NO. 29221

PATHOLOGICAL STUDY ON THE EXPERIMENTAL RABBITS AT AIR-POLLUTED AREA IN YOKKAICHI.
12590 APTIC NO. 29502

EXPERIMENTAL STUDIES ON THE HEALTH EFFECTS OF AUTO EXHAUST GAS IN LOW CONCENTRATIONS. (REPORT I) PRELIMINARY EXPERIMENT.
12589 APTIC NO. 29921

PENNSYLVANIA

EVALUATION TRIALS OF URBAN AIR POLLUTION MODELS.
12439 APTIC NO. 29697

AIR POLLUTION--THE STATUS TODAY.
12681 APTIC NO. 28923

PENTANES

ANALYSIS OF HC OF LOW GRADE IN ATMOSPHERE.
12391 APTIC NO. 29482

PENTENES

QUALITATIVE ANALYSIS OF EXHAUST GAS FROM FISH MEAL PLANT.
12028 APTIC NO. 29662

PERMEABILITY

PARTICLE CAPTURE MECHANISMS IN FIBROUS FILTERS.
12214 APTIC NO. 29324

PERMITS

COMPARATIVE STUDY OF CERTAIN PROVISIONS IN MEMBER STATES FOR CONTROLLING AIR POLLUTION.
12656 APTIC NO. 30052

PEROXIDES

THE REACTION OF OZONE WITH SOLID POLYSTYRENE.
12505 APTIC NO. 29666

PEROXYACETYL NITRATE

PHOTOCHEMICAL SMOG AND ITS REACTION MECHANISM.
12459 APTIC NO. 29934

AIR POLLUTION OXIDANTS - THEIR EFFECTS ON METABOLIC PROCESSES IN PLANTS.
12598 APTIC NO. 29524

ON COMPOSITE HARM TO PLANTS BY SULFUROUS ACID GAS AND OXIDANT.
12604 APTIC NO. 29671

PEROXYACYL NITRATES

PHOTOCHEMICAL SMOG AND ITS REACTION MECHANISM.
12459 APTIC NO. 29934

AIR POLLUTION OXIDANTS - THEIR EFFECTS ON METABOLIC PROCESSES IN PLANTS.
12598 APTIC NO. 29524

ON COMPOSITE HARM TO PLANTS BY SULFUROUS ACID GAS AND OXIDANT.
12604 APTIC NO. 29671

PERSONNEL

ENVIRONMENTAL CONTROL AND THE INSURANCE SAFETY ENGINEER.
12170 APTIC NO. 29115

A SUGGESTED OUTLINE FOR PROVIDING INFORMATION ON FACILITIES EXISTING IN COUNTRIES AT PILOT STATION.
12360 APTIC NO. 29055

ESTIMATION OF GROUND LEVEL CONCENTRATION BY SMOKE-DIFFUSION WIND TUNNELS.
12462 APTIC NO. 29820

INTRODUCTION AND GENERAL DESCRIPTION OF THE STUDY AND OF THE PROCEDURES FOR PROLONGED

EXPOSURE TO CARBON MONOXIDE AND HYPOXIA.
12530 APTIC NO. 29503

THE RESEARCH FOR THE EFFECTS OF AIR POLLUTION ON THE HUMAN BODY. (II) THE RELATIONSHIP BETWEEN ASTHMA-LIKE DISEASES OF THE SCHOOL CHILDREN AND AIR POLLUTION IN KITAKYUSHU.
12524 APTIC NO. 29683

EFFECTS OF SOOT AND SMOKE ON THE HEALTH OF SCHOOL CHILDREN.
12556 APTIC NO. 29791

COMPARATIVE STUDY OF CERTAIN PROVISIONS IN MEMBER STATES FOR CONTROLLING AIR POLLUTION.
12656 APTIC NO. 30052

THE ENVIRONMENTAL CRISIS: THROUGH A GLASS DARKLY.
12674 APTIC NO. 29619

PESTICIDES

PESTICIDES IN AIR. VOLATILIZATION OF SOIL-APPLIED DDT AND DDD FROM FLOODED AND NONFLOODED PLOTS.
12047 APTIC NO. 29620

A NEW ENVIRONMENTAL POLLUTANT - POLYCHLORINATED BIPHENYLS (PCB).
12044 APTIC NO. 29984

ELECTROSTATIC FIELD BREAKDOWN PHENOMENA IN APPLYING CHARGED PARTICLES.
12236 APTIC NO. 30006

THE GAS CHROMATOGRAPHIC DETERMINATION OF PESTICIDES. (PART 3) DETERMINATION OF RESIDUES OF ORGANOPHOSPHORUS PESTICIDES.
12349 APTIC NO. 30134

MEASUREMENT OF ATMOSPHERIC LEVELS OF PESTICIDES.
12392 APTIC NO. 29812

PETER SPENCE PROCESS (CLA

PROCESS FOR THE SEPARATION OF SULFUR FROM GAS.
12052 APTIC NO. 29273

REDUCING SO2 EMISSION FROM STATIONARY SOURCES.
12098 APTIC NO. 30102

SULFUR RECOVERY IN THE MANUFACTURE OF PIPELINE GAS FROM COAL.
12635 APTIC NO. 29143

PETROLEUM DISTRIBUTION

CONTROL OF ATMOSPHERIC EMISSIONS FROM PETROLEUM STORAGE TANKS.
12063 APTIC NO. 29889

PETROLEUM PRODUCTION

OIL REFINERS PREPARE FOR ANIT-POLLUTION CONTROLS.
12040 APTIC NO. 29127

PROBLEMS OF PUBLIC NUISANCE CAUSED BY BAD ODORS IN HYOGO PREFECTURE.
12029 APTIC NO. 29599

PROBLEM OF OBNOXIOUS ODOR IN INDUSTRIAL POLLUTIONS.
12202 APTIC NO. 29745

INDUSTRIAL EMISSIONS: AN ANALYSIS OF SOME KEY FACTORS.
12669 APTIC NO. 29469

PETROLEUM REFINING

OIL REFINERS PREPARE FOR ANIT-POLLUTION CONTROLS.
12040 APTIC NO. 29127

PROBLEMS OF PUBLIC NUISANCE CAUSED BY BAD ODORS IN HYOGO PREFECTURE.
12029 APTIC NO. 29599

PHYSICAL-CHEMICAL PROBLEMS OF AIR POLLUTION.
11996 APTIC NO. 29786

GULF RESIDUAL OIL HDS PROCESS.
12136 APTIC NO. 29501

CO BOILER OF FLUIDIZED BED TYPE CATALYTIC CRACKING PROCESS PRODUCIN NO LEAD GASOLINE.
12237 APTIC NO. 29535

LAW-MAKERS SAY: CLEAN UP OR SHUT DOWN.
12055 APTIC NO. 29628

COUNTERMEASURES ON PREVENTION OF INDUSTRIAL POLLUTIONS--PART II ON SULFURIC ACID GAS.
12210 APTIC NO. 29646

PROBLEM OF OBNOXIOUS ODOR IN INDUSTRIAL POLLUTIONS.
12202 APTIC NO. 29745

ON MEASUREMENT OF ODOR.
12256 APTIC NO. 29726

SPECIAL COLUMN CONFIGURATION FOR THE ANALYSIS OF SOME INORGANIC GASES AND LIGHT HYDROCARBONS.
12315 APTIC NO. 30029

PH

AIR POLLUTION BY LEAD AND ZINC IN THE AREA OF COMBINED METALLURGICA WORKS AND ITS INFLUENCE ON VEGETATION AND SOIL.
12031 APTIC NO. 29572

OXIDATION OF SODIUM SULFIDE AND MERCAPTIDE IN BLACK LIQUOR.
12071 APTIC NO. 29278

ABSORPTION OF SULFUROUS ACID GAS BY WATER SOLUTION OF POTASSIUM PHOSPHATE.
12172 APTIC NO. 29731

THE SCRUBBING OF TAIL GAS FROM SULFURIC ACID PLANTS.
12067 APTIC NO. 30096

ANALYSIS OF MONOETHANOLAMIN IN THE AIR.
12339 APTIC NO. 29970

BORDEAUX. STUDY OF ATMOSPHERIC POLLUTION IN THE BUILT-UP AREA.
12420 APTIC NO. 30109

OXYGEN AFFINITY AND ACID-BASE STATUS OF HUMAN BLOOD DURING EXPOSURE TO HYPOXIA AND CARBON MONOXIDE.
12567 APTIC NO. 29528

FURTHER STUDIES ON THE EFFECT OF SULPHUR DIOXIDE ON LICHENS AND BRYOPHYTES.
12599 APTIC NO. 29645

PROBLEMS OF FLUORINE EMISSION MEASUREMENTS.
12608 APTIC NO. 29736

THE MECHANISM OF ATMOSPHERIC RUSTING AND THE EFFECT OF CU AND P ON THE RUST FORMATION OF LOW ALLOY STEELS.
12615 APTIC NO. 29631

PHENYL COMPOUNDS

A NEW ENVIRONMENTAL POLLUTANT - POLYCHLORINATED BIPHENYLS (PCB).
12044 APTIC NO. 29984

PLANTS AND POLLUTED AIR.
12230 APTIC NO. 30083

THE REACTION OF OZONE WITH SOLID POLYSTYRENE.
12505 APTIC NO. 29666

COLLECTION OF LEGISLATIONS RELATED WITH MITI CONCERNING POLLUTIONS.
12646 APTIC NO. 29504

PHENYLS

PLANTS AND POLLUTED AIR.
12230 APTIC NO. 30083

THE REACTION OF OZONE WITH SOLID POLYSTYRENE.
12505 APTIC NO. 29666

PHILADELPHIA

EVALUATION TRIALS OF URBAN AIR POLLUTION MODELS.
12439 APTIC NO. 29697

PHOSPHATES

PROBLEMS OF PUBLIC NUISANCE CAUSED BY BAD ODORS IN HYOGO PREFECTURE.
12029 APTIC NO. 29599

ABSORPTION OF SULFUROUS ACID GAS BY WATER SOLUTION OF POTASSIUM PHOSPHATE.
12172 APTIC NO. 29731

MUFFLER FOR REMOVING PARTICULATE LEAD FROM EXHAUST GASES OF INTERNAL COMBUSTION ENGINES.
12168 APTIC NO. 29920

COLLECTION OF LEGISLATIONS RELATED WITH MITI CONCERNING POLLUTIONS.
12646 APTIC NO. 29504

PHOSPHORESCENCE

LUMINESCT SPECTROMETER ANALYSIS METHOD OF QUANTITATIVE ANALYSIS OF METALS IN DUST FLOATING IN ATMOSPHERE.
12279 APTIC NO. 29466

THE STUDY OF THE REACTION OF HYDROGEN SULPHIDE WITH ATOMIC OXYGEN USING EMISSION SPECTRUM.
12516 APTIC NO. 29884

SPECTROSCOPIC STUDIES OF PORPHYRINS, PHTHALOCYANINES, AND CS2 IN INERT MATRICES.
12471 APTIC NO. 30050

INTERNAL CONVERSION IN BENZENE, BENZENE-D6, AND SULFUR DIOXIDE.
12508 APTIC NO. 30063

PHOSPHORIC ACID

COMPARISON OF VARIOUS METHODS OF DETERMINING QUARTZ CONTENT IN NOXIOUS DUST.
12263 APTIC NO. 29546

RESULTS OF COMPARATIVE TESTS ON QUARTZ CONTENT OBTAINED FROM LABORATORIES USING VARIOUS TECHNIQUES OF DETERMINATION.
12327 APTIC NO. 29552

OXIDATION OF NITROGEN MONOXIDE.
12320 APTIC NO. 29676

COLLECTION OF LEGISLATIONS RELATED WITH MITI CONCERNING POLLUTIONS.
12646 APTIC NO. 29504

PHOSPHORUS COMPOUNDS

PROBLEMS OF PUBLIC NUISANCE CAUSED BY BAD ODORS IN HYOGO PREFECTURE.
12029 APTIC NO. 29599

ABSORPTION OF SULFUROUS ACID GAS BY WATER SOLUTION OF POTASSIUM PHOSPHATE.
12172 APTIC NO. 29731

MUFFLER FOR REMOVING PARTICULATE LEAD FROM EXHAUST GASES OF INTERNAL COMBUSTION ENGINES.
12168 APTIC NO. 29920

THE MECHANISM OF ATMOSPHERIC RUSTING AND THE EFFECT OF CU AND P ON THE RUST FORMATION OF LOW ALLOY STEELS.
12615 APTIC NO. 29631

COLLECTION OF LEGISLATIONS RELATED WITH MITI CONCERNING POLLUTIONS.
12646 APTIC NO. 29504

PHOTOCHEMICAL REACTIONS

PHYSICAL-CHEMICAL PROBLEMS OF AIR POLLUTION.
11996 APTIC NO. 29786

COUNTERMEASURES ON AUTOMOBILE EXHAUST GAS.
12050 APTIC NO. 29935

GASOLINE, LEAD AND AIR POLLUTION.
12014 APTIC NO. 30027

TAKING ANOTHER LOOK BEFORE WE TAKE THE LEAD OUT.
11997 APTIC NO. 30067

THE ADIABATIC FLASH PHOTOLYSIS OF NO2 AND SO2.
12259 APTIC NO. 29630

ATMOSPHERIC POLLUTION. APPARATUS FOR MEASURING THE CONCENTRATION OF CONDENSATION NUCLEI IN THE ATMOSPHERE.
12267 APTIC NO. 30041

ANALYSIS OF HC OF LOW GRADE IN ATMOSPHERE.
12391 APTIC NO. 29482

EXPERIMENT ON PHOTOCHEMICAL REACTION OF MOTOR EXHAUST GAS.
12469 APTIC NO. 29500

PHOTOCHEMICAL SMOG.
12418 APTIC NO. 29672

AN EXPERIMENTAL STUDY OF PHOTOCHEMICAL OXIDATION OF ORGANIC SUBSTANCES IN THE ATMOSPHERE.
12441 APTIC NO. 29681

EPISODE 104.
12410 APTIC NO. 29695

INTERNATIONAL CONFERENCE ON CONDENSATION NUCLEI AND ICE-FORMING NUCLEI.
12454 APTIC NO. 29699

ATMOSPHERIC REACTIONS AND SCAVENGING PROCESSES.
12426 APTIC NO. 29774

FORMATION OF PARTICLES BY PHOTOLYSIS AND RADIOLYSIS.
12407 APTIC NO. 29809

CARBON MONOXIDE IN RAINWATER.
12460 APTIC NO. 29880

PHOTOCHEMICAL SMOG AND ITS REACTION MECHANISM.
12459 APTIC NO. 29934

PHOTOCHEMICAL REACTIONS OF MOTOR VEHICLE EXHAUST GASES.
12402 APTIC NO. 29960

THE ULTRA-VIOLET PHOTOLYSIS OF OZONE IN THE PRESENCE OF WATER VAPOUR.
12435 APTIC NO. 30012

MECHANISM OF SINGLET MOLECULAR OXYGEN FORMATION FROM PHOTOLYSIS OF OZONE AT 2537 A.
12424 APTIC NO. 30110

STUDIES ON PHOTOCHEMICAL REACTION BETWEEN SULFURIC ACID GAS AND ORGANIC COMPOUNDS (2).
12512 APTIC NO. 29463

STUDIES ON PHOTOLYSIS OF NITORGEN OXIDE.
12513 APTIC NO. 29527

THE ULTRA-VIOLET PHOTOLYSIS OF OZONE IN THE PRESENCE OF MOLECULAR OXYGEN.
12500 APTIC NO. 29778

PHOTOCHEMICAL REACTION BETWEEN SO2 AND ORGANIC COMPOUNDS (II).
12514 APTIC NO. 29967

PHOTOLYSIS OF THIOLANE VAPOR.
12478 APTIC NO. 30115

PROGRESS REPORT. JANUARY-DECEMBER 1969.
12555 APTIC NO. 28850

CHEMISTRY OF SINGLET OXYGEN. X. CAROTENOID QUENCHING PARALLELS BIOLOGICAL PROTECTION.
12546 APTIC NO. 29716

AIR POLLUTION OXIDANTS - THEIR EFFECTS ON METABOLIC PROCESSES IN PLANTS.
12598 APTIC NO. 29524

PROBLEMS OF FLUORINE EMISSION MEASUREMENTS.
12608 APTIC NO. 29736

TOKYO FIGHTS POLLUTION. AN URGENT APPEAL FOR REFORM.
12653 APTIC NO. 29888

PHOTOELECTRIC PHENOMENA

RATES OF ENERGY TRANSFER FROM N2 A CUBED SIGMA(+) U TO VARIOUS MOLECULES. INITIAL AND FINAL QUANTUM STATES IN THE TRANSFER TO NOX SQUARED PI AND HG(6 1S SUB O), AND VIBRATIONAL RELAXATION OF N2 A CUBED SIGMA(+) U (V EQUALS 1) IN HELIUM.
12481 APTIC NO. 29750

INTERNAL CONVERSION IN BENZENE, BENZENE-D6, AND SULFUR DIOXIDE.
12508 APTIC NO. 30063

ELECTRON ENERGY LOSS SPECTRA OF NO2 AND SO2.
12480 APTIC NO. 30079

PHOTOGRAPHIC METHODS

A PHOTOGRAPHIC METHOD OF DETERMINING THE EMISSION OF DUST GENERATED BY INDUSTRIAL MACHINERY.
12254 APTIC NO. 29544

SMOKE PLUMES MONITORED DAY AND NIGHT. PRACTICAL EXPERIENCE WITH A TV-LASER PLANT IN DUISBURG.
12247 APTIC NO. 30013

CONTINUOUS CHARGED CLOUD-PARTICLE SAMPLER.
12451 APTIC NO. 29712

THE ULTRA-VIOLET PHOTOLYSIS OF OZONE IN THE PRESENCE OF WATER VAPOUR.
12435 APTIC NO. 30012

COLLECTED PHOTOGRAPHS DEMONSTRATING PLANT DAMAGE BY AIR POLLUTION.
12591 APTIC NO. 29924

PHOTOIONIZATION

INELASTIC ELECTRON SCATTERING FROM NITROUS OXIDE BETWEEN 5.0 AND 20.0 EV ENERGY LOSS.
12521 APTIC NO. 27460

PHOTOLYSIS

THE ADIABATIC FLASH PHOTOLYSIS OF NO2 AND SO2.
12259 APTIC NO. 29630

ATMOSPHERIC POLLUTION. APPARATUS FOR MEASURING THE CONCENTRATION OF CONDENSATION NUCLEI IN THE ATMOSPHERE.
12267 APTIC NO. 30041

FORMATION OF PARTICLES BY PHOTOLYSIS AND RADIOLYSIS.
12407 APTIC NO. 29809

THE ULTRA-VIOLET PHOTOLYSIS OF OZONE IN THE PRESENCE OF WATER VAPOUR.
12435 APTIC NO. 30012

MECHANISM OF SINGLET MOLECULAR OXYGEN FORMATION FROM PHOTOLYSIS OF OZONE AT 2537 A.
12424 APTIC NO. 30110

STUDIES ON PHOTOLYSIS OF NITORGEN OXIDE.
12513 APTIC NO. 29527

THE ULTRA-VIOLET PHOTOLYSIS OF OZONE IN THE PRESENCE OF MOLECULAR OXYGEN.
12500 APTIC NO. 29778

PHOTOLYSIS OF THIOLANE VAPOR.
12478 APTIC NO. 30115

AIR POLLUTION OXIDANTS - THEIR EFFECTS ON METABOLIC PROCESSES IN PLANTS.
12598 APTIC NO. 29524

PHOTOMETRIC METHODS

A NEW METHOD OF MEASURING THE OPACITY OF COMBUSTION FUMES.
12249 APTIC NO. 29068

INFRARED RADIATION PROPERTIES OF SULFUR DIOXIDE.
12269 APTIC NO. 29521

NEW METHODS OF DETERMINING AIR POLLUTION.
12316 APTIC NO. 29595

THE ANALYSIS OF MERCURY IN URINE, BLOOD, WATER, AND AIR.
12306 APTIC NO. 29652

METHODS OF DETERMINING SULFUR DIOXIDE (REVIEW).
12305 APTIC NO. 29801

ON THE MEASUREMENT AND ABSOLUTE CALIBRATION OF THE STRENGTH OF SOLAR RADIATION ENERGY.
12348 APTIC NO. 29863

MEASUREMENT OF ATMOSPHERIC DUST BY LIGHT SCATTERING METHOD AND HIGH VOLUME SAMPLER METHOD.
12357 APTIC NO. 29864

AUTOMATIC MEASURING APPARATUS OF FLUORIDE GASSES IN AIR.
12299 APTIC NO. 29966

PHOTON DETECTION OF LIGHT DIFFUSION WITH ULTRAFINE AEROSOLS.
12351 APTIC NO. 30038

GAS CHROMATOGRAPHY OF REACTIVE SULFUR GASES IN AIR AT THE PARTS- PER-BILLION LEVEL.
12347 APTIC NO. 30065

SEMI-AUTOMATIC DETERMINATION OF LEAD IN WIDE BLOOD.
12565 APTIC NO. 29663

EFFECTS OF ATMOSPHERIC LEAD ON TRAFFIC POLICEMEN IN A MEDIUM SIZED CITY.
12566 APTIC NO. 29958

ATMOSPHERIC POLLUTANTS FRENCH LEGISLATION. STANDARD MEASURING METHODS. RECENT COMMERCIAL APPARATUS.
12638 APTIC NO. 29003

PHOTOOXIDATION

PHYSICAL-CHEMICAL PROBLEMS OF AIR POLLUTION.
11996 APTIC NO. 29786

AN EXPERIMENTAL STUDY OF PHOTOCHEMICAL OXIDATION OF ORGANIC SUBSTANCES IN THE ATMOSPHERE.
12441 APTIC NO. 29681

ATMOSPHERIC REACTIONS AND SCAVENGING PROCESSES.
12426 APTIC NO. 29774

FORMATION OF PARTICLES BY PHOTOLYSIS AND RADIOLYSIS.
12407 APTIC NO. 29809

PHOTOCHEMICAL SMOG AND ITS REACTION MECHANISM.
12459 APTIC NO. 29934

PROGRESS REPORT. JANUARY-DECEMBER 1969.
12555 APTIC NO. 28850

AIR POLLUTION OXIDANTS - THEIR EFFECTS ON METABOLIC PROCESSES IN PLANTS.
12598 APTIC NO. 29524

PHOTOSYNTHESIS

AIR POLLUTION OXIDANTS - THEIR EFFECTS ON METABOLIC PROCESSES IN PLANTS.
12598 APTIC NO. 29524

ATMOSPHERIC CARBON DIOXIDE AND THE BIOSPHERE.
12593 APTIC NO. 30078

ENVIRONMENT PRESERVATION - FROM THE ECOLOGICAL POINT OF VIEW.
12678 APTIC NO. 29961

PHTHALIC ACID

TFE-FLUOROCARBON FIBER FILTER BAGS--IT COSTS MORE TO GO FIRST CLASS.
12109 APTIC NO. 30121

PHYSICAL THERAPY

CAN ANYTHING BE DONE FOR EMPHYSEMA? J. Louisiana State Med. Soc., 122(7):216-218, July 1970. 18 refs.
12579 APTIC NO. 30137

RELATION BETWEEN INDUSTRIALIZATION AND THE DISTRIBUTION AND GROWTH OF EPIPHYTIC LICHENS AND MOSSES IN MONTREAL.
12602 APTIC NO. 29998

PILOT PLANTS

CONSIDERATIONS IN THE CONSTRUCTION OF LARGE REFUSE INCINERATORS.
12026 APTIC NO. 29547

GULF RESIDUAL OIL HDS PROCESS.
12136 APTIC NO. 29501

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

ABSORPTION OF SULFUROUS ACID GAS BY WATER SOLUTION OF POTASSIUM PHOSPHATE.
12172 APTIC NO. 29731

H-OIL AS A TOOL FOR LOW SULFUR FUEL PRODUCTION.
12126 APTIC NO. 29808

EQUALIZATION OF PARTICLE TRANSFER IN TRANSFERABLE STRATUM.
12144 APTIC NO. 29928

ADSORPTIVITY OF DESULFURIZING ACTIVATED CARBON FOR SULFUROUS ACID GAS (I). PERFORMANCE VARIATION OF ACTIVATED CARBON IN PILOT PLANT.
12206 APTIC NO. 29939

DESULFURIZATION OF WASTE GASES AND FUELS.
12205 APTIC NO. 29957

PROCESS FOR REMOVING SULPHUR FROM GASES.
12139 APTIC NO. 30049

CONTROL OF POLLUTANT EMISSION AND SULPHURIC ACID CORROSION FROM COMBUSTION OF RESIDUAL FUEL OIL. PART I: LOW-PRESSURE HEATING BOILERS WITH MECHANICAL ATOMIZING BURNERS.
12164 APTIC NO. 30055

REDUCING SO2 EMISSION FROM STATIONARY SOURCES.
12098 APTIC NO. 30102

SCALE-UP OF LABORATORY FLUID-BED DATA: THE SIGNIFICANCE OF SLUG FLOW.
12501 APTIC NO. 29494

PINTO BEANS

AIR POLLUTION OXIDANTS - THEIR EFFECTS ON METABOLIC PROCESSES IN PLANTS.
12598 APTIC NO. 29524

ON COMPOSITE HARM TO PLANTS BY SULFUROUS ACID GAS AND OXIDANT.
12604 APTIC NO. 29671

ETHYLENE PRODUCTION FROM OZONE INJURED PLANTS.
12596 APTIC NO. 30059

PLANNING AND ZONING

A METHOD FOR OPTIMIZING POLLUTANT EMISSIONS IN AN AIRSHED.
12448 APTIC NO. 29903

AIR POLLUTION.
12575 APTIC NO. 29949

ON THE BASIC LAW FOR ENVIRONMENTAL POLLUTION CONTROL, NOISE CONTROL LAW, WATER POLLUTION PREVENTION LAW, AND AIR POLLUTION PREVENTION LAW.
12670 APTIC NO. 29509

COMPARATIVE STUDY OF CERTAIN PROVISIONS IN MEMBER STATES FOR CONTROLLING AIR POLLUTION.
12656 APTIC NO. 30052

LONG RANGE PLANNING IN AIR RESOURCE MANAGEMENT.
12657 APTIC NO. 30056

PLANT DAMAGE

AIR POLLUTION.
12363 APTIC NO. 29510

PHOTOCHEMICAL SMOG AND ITS REACTION MECHANISM.
12459 APTIC NO. 29934

AIR POLLUTION OXIDANTS - THEIR EFFECTS ON METABOLIC PROCESSES IN PLANTS.
12598 APTIC NO. 29524

ON DAMAGE TO PLANTS BY FLUORIDES IN EXHAUST GAS FROM TILE MANUFACTURING FACTORY.
12606 APTIC NO. 29597

METABOLIC EFFECTS OF ATMOSPHERIC FLUORIDES ON PLANTS.
12605 APTIC NO. 29616

ON COMPOSITE HARM TO PLANTS BY SULFUROUS ACID GAS AND OXIDANT.
12604 APTIC NO. 29671

DAMAGE TO PLANTS BY AIR POLLUTANTS.
12603 APTIC NO. 29746

COLLECTED PHOTOGRAPHS DEMONSTRATING PLANT DAMAGE BY AIR POLLUTION.
12591 APTIC NO. 29924

STUDIES ON THE SMOKE DAMAGE OF TREES. (I) ON THE ACUTE DAMAGE SYMPTOMS BY THE SO2.
12607 APTIC NO. 29976

THE EFFECTS OF AIR POLLUTION ON VEGETATION.
12600 APTIC NO. 30003

ETHYLENE PRODUCTION FROM OZONE INJURED PLANTS.
12596 APTIC NO. 30059

ABSCISSION: THE PHYTOGERONTOLOGICAL EFFECTS OF ETHYLENE.
12592 APTIC NO. 30060

AIR POLLUTION--THE STATUS TODAY.
12681 APTIC NO. 28923

PLANT GROWTH

AIR POLLUTION OXIDANTS - THEIR EFFECTS ON METABOLIC PROCESSES IN PLANTS.
12598 APTIC NO. 29524

STUDIES ON THE SMOKE DAMAGE OF TREES. (I) ON THE ACUTE DAMAGE SYMPTOMS BY THE SO2.
12607 APTIC NO. 29976

THE EFFECTS OF AIR POLLUTION ON VEGETATION.
12600 APTIC NO. 30003

ABSCISSION: THE PHYTOGERONTOLOGICAL EFFECTS OF ETHYLENE.
12592 APTIC NO. 30060

ATMOSPHERIC CARBON DIOXIDE AND THE BIOSPHERE.
12593 APTIC NO. 30078

ENVIRONMENT PRESERVATION - FROM THE ECOLOGICAL POINT OF VIEW.
12678 APTIC NO. 29961

PLANT INDICATORS

SIMPLIFIED TECHNIQUES IN AIR POLLUTION MEASUREMENT.
12289 APTIC NO. 29771

PLANTS AND SOILS AS INDICATORS OF METALS IN THE AIR.
12281 APTIC NO. 30113

A BIOLOGICAL SCALE FOR THE ESTIMATION OF SULPHUR DIOXIDE POLLUTION.
12379 APTIC NO. 29522

RELATION BETWEEN INDUSTRIALIZATION AND THE DISTRIBUTION AND GROWTH OF EPIPHYTIC LICHENS AND MOSSES IN MONTREAL.
12602 APTIC NO. 29998

PLASTICS

CONSIDERATIONS IN THE CONSTRUCTION OF LARGE REFUSE INCINERATORS.
12026 APTIC NO. 29547

RECENT TREND AND PROBLEMS OF INDUSTRIAL WASTES TREATING EQUIPMENT.
12041 APTIC NO. 29827

EXPERIMENTAL STUDY ON PLASTICS INCINERATION.
12017 APTIC NO. 29841

ONE ANSWER TO PLASTICIZER POLLUTION.
11991 APTIC NO. 30028

ON DISPOSAL OF PLASTIC WASTES (PVC) BY FLUID LAYER OF MEDIUM.
12074 APTIC NO. 29449

POLLUTION TECHNOLOGY--WHAT THEY RE DOING OVERSEAS.
12244 APTIC NO. 29650

ACID MIST PRECIPITATOR MADE OF TEFLON FIBER.
12061 APTIC NO. 29833

BALL BLANKETS FOR EFFLUENT TREATMENT.
12083 APTIC NO. 30034

TFE-FLUOROCARBON FIBER FILTER BAGS--IT COSTS MORE TO GO FIRST CLASS.
12109 APTIC NO. 30121

A NEW DUST-GENERATING SYSTEM FOR INHALATION STUDIES.
12486 APTIC NO. 29653

DEGRADATION OF POLYMERS IN REACTIVE GASES.
12617 APTIC NO. 29472

PLATING

METHOD TO ARREST AND REMOVE WHITE SMOKE PRODUCED FROM MOLTEN ZINC PLATING PROCESS.
12135 APTIC NO. 29940

PLATINUM

ELECTRIC DUST COLLECTION DEVICE.
12151 APTIC NO. 29819

CATALYTIC OXIDATION OF CARBON MONOXIDE IN THE PRESENCE OF RECENTLY SYNTHESIZED PLATINUM COMPLEXES.
12117 APTIC NO. 29896

AN AUTOMATIC COULOMETRIC ANALYZER OF OZONE IN THE ATMOSPHERE.
12274 APTIC NO. 29757

PLETHYSMOGRAPHY

CAPILLARY FILTRATION RATE ON THE HUMAN CALF DURING EXPOSURE TO CARBON MONOXIDE AND HYPOXIA (3454 M).
12578 APTIC NO. 29804

PLUME BEHAVIOR

JET AIRCRAFT AIR POLLUTANT PRODUCTION AND DISPERSION.
12016 APTIC NO. 30130

GASEOUS PLUME DIFFUSION ABOUT ISOLATED STRUCTURES OF SIMPLE GEOMETRY. (ANNUAL PROGRESS REPORT).
12438 APTIC NO. 29584

ATMOSPHERIC DISPERSION OF STACK EFFLUENTS.
12458 APTIC NO. 29773

ESTIMATION OF GROUND LEVEL CONCENTRATION BY SMOKE-DIFFUSION WIND TUNNELS.
12462 APTIC NO. 29820

TURBULENT DIFFUSION THEORY TAKING TURBULENT BOUNDARY LAYER INTO CONSIDERATION.
12463 APTIC NO. 29822

THE EFFECT OF ATMOSPHERIC CONDITIONS ON PLUME RISE.
12455 APTIC NO. 29865

PLUME RISE: A RECENT CRITICAL REVIEW.
12408 APTIC NO. 30068

CALCULATION OF A JET AXIS IN A DRIFTING FLOW.
12507 APTIC NO. 30042

METABOLIC EFFECTS OF ATMOSPHERIC FLUORIDES ON PLANTS.
12605 APTIC NO. 29616

PNEUMOCONIOSIS

ABOUT THE PROBLEM OF REPRESENTATIVE SAMPLING IN THE CASE OF WET SANDBLASTING.
12033 APTIC NO. 29542

OBSERVATIONS ON THE ELIMINATION OF DUST.
12143 APTIC NO. 29554

MEASURES TAKEN BY THE REGIONAL SOCIAL SECURITY ADMINISTRATION OF LIMOGES TO REDUCE THE RISKS OF SILICOSIS.
12171 APTIC NO. 29561

A MATHEMATICAL MODEL FOR MEASURING MASS/NUMBER INDEX OF RESPIRABLE AIRBORNE COAL DUST.
12258 APTIC NO. 30081

A CONTRIBUTION TO THE EVALUATION OF THE RISK OF SILICOSIS.
12549 APTIC NO. 29558

CHART FOR EVALUATION OF THE RISK OF SILICOSIS.
12542 APTIC NO. 29559

TWO OBSERVATIONS IN A FLUORSPAR QUARRY.
12535 APTIC NO. 29565

THE ROLE OF TRACE METALS IN CHEMICAL CARCINOGENESIS: ASBESTOS CANCERS.
12543 APTIC NO. 29993

PNEUMONIA

STUDIES OF THE SIGNIFICANCE OF DUSTS AND GASES FOR THE PATHOLOGY OF INFECTIONS OF THE RESPIRATORY TRACT.
12529 APTIC NO. 29571

PULMONARY CHANGES IN 7000 MICE FOLLOWING PROLONGED EXPOSURE TO AMBIENT AND FILTERED LOS ANGELES AIR.
12551 APTIC NO. 29763

POINT SOURCES

TURBULENT DIFFUSION THEORY TAKING TURBULENT BOUNDARY LAYER INTO CONSIDERATION.
12463 APTIC NO. 29822

THE EFFECT OF ATMOSPHERIC CONDITIONS ON PLUME RISE.
12455 APTIC NO. 29865

DETERMINATION OF THE DISPERSION OF SCATTERING NEAR THE CRITICAL POINT USING THE SCATTERED LIGHT INDICATRIX.
12499 APTIC NO. 30051

POLAROGRAPHIC METHODS

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

LEAD CONCENTRATION IN YOKOHAMA AIR.
12399 APTIC NO. 29814

DISTRIBUTION OF LEAD IN THE AIR NEAR CITY ROADS.
12388 APTIC NO. 29918

POLLENS

STUDIES OF VENTILATORY MEASURES INDOORS AGAINST POLLEN ALLERGY.
12116 APTIC NO. 30011

POLYMERIZATION

HETEROGENEOUS CATALYSIS INVOLVING ASTOICHIOMETRIC COMPONENTS. IV. INITIATION EFFECTS OF CARBON MONOXIDE AND OXYGEN OXIDE IN THE HYDROPOLYMERIZATION OF PROPENE AND ISOBUTENE.
12488 APTIC NO. 29871

POLYNUCLEAR COMPOUNDS

PROBLEMS OF PUBLIC NUISANCE CAUSED BY BAD ODORS IN HYOGO PREFECTURE.
12029 APTIC NO. 29599

PHYSICAL-CHEMICAL PROBLEMS OF AIR POLLUTION.
11996 APTIC NO. 29786

EXHAUST GAS CLEANER FOR DIESEL ENGINES.
12221 APTIC NO. 29533

CONTROL OF POLLUTANT EMISSION AND SULPHURIC ACID CORROSION FROM COMBUSTION OF RESIDUAL FUEL OIL. PART I: LOW-PRESSURE HEATING BOILERS WITH MECHANICAL ATOMIZING BURNERS.
12164 APTIC NO. 30055

NEW METHODS OF DETERMINING AIR POLLUTION.
12316 APTIC NO. 29595

STUDY OF POLYCYCLIC HYDROCARBONS FIXED ON ATMOSPHERIC DUSTS.
12270 APTIC NO. 29851

DETERMINATION OF AROMATIC HYDROCARBONS EMITTED FROM THE DRY BATTERY PLANT.
12287 APTIC NO. 29862

A SHORT TERM DETERMINATION OF BENZO(A)PYRENE AND BENZO(K) FLUORANTHENE IN AIR POLLUTANTS.
12319 APTIC NO. 29965

DETERMINATION OF POLYNUCLEAR AROMATICS IN SUSPENDED PARTICLES.
12393 APTIC NO. 29462

BENZPYRENE AND OTHER AROMATIC HYDROCARBONS IN THE DUST OF POLISH TOWNS.
12385 APTIC NO. 29569

THE 3,4-BENZPYRENE CONTENT OF THE AIR IN TWO INDUSTRIAL AREAS.
12400 APTIC NO. 29586

TEN YEARS OF AIR POLLUTION IN HOKKAIDO.
12367 APTIC NO. 29727

EVOLUTION OF THE ATMOSPHERIC CONTAMINATION IN MADRID IN 1969.
12371 APTIC NO. 30089

QUENCHING OF NAPHTHALENE LUMINESCENCE BY OXYGEN AND NITRIC OXIDE.
12495 APTIC NO. 29611

ON THE PROBLEM OF THE COMBINED EFFECTS OF SULFUR DIOXIDE AND BENZPYRENE ON THE ORGANISMS OF TEST ANIMALS.
12583 APTIC NO. 2958[illegible]

THE ROLE OF TRACE METALS IN CHEMICAL CARCINOGENESIS: ASBESTOS CANCERS.
12543 APTIC NO. 29993

THE PRESENT RESULTS OF DETERMINATIONS OF 3,4-BENZPYRENE IN THE AIR OVER BUDAPEST.
12631 APTIC NO. 29590

PORTABLE

AN ASPIRATION INSTALLATION OF HIGH EFFICIENCY FOR COLLECTING SAMPLES OF RADIOACTIVE AEROSOLS FROM THE ATMOSPHERE.
12318 APTIC NO. 29670

POTASSIUM COMPOUNDS

AIR POLLUTION BY NITRIC OXIDE FROM FERTILIZER FACTORIES.
12051 APTIC NO. 29568

MARKET DEVELOPMENT IN GAS ECONOMY.
12010 APTIC NO. 29781

ABSORPTION OF SULFUROUS ACID GAS BY WATER SOLUTION OF POTASSIUM PHOSPHATE.
12172 APTIC NO. 29731

KINETICS OF RECOVERING SULFUR FROM THE SPENT SEED IN AN MHD POWER PLANT.
12118 APTIC NO. 30048

ON THE EFFECT OF ACCOMPANYING GASES IN QUANTITATIVE ANALYSIS OF HYDROGEN SULFIDE USING METHYLENE BLUE.
12343 APTIC NO. 29505

OXIDATION OF NITROGEN MONOXIDE.
12320 APTIC NO. 29676

THE GAS CHROMATOGRAPHIC DETERMINATION OF PESTICIDES. (PART 3) DETERMINATION OF RESIDUES OF ORGANOPHOSPHORUS PESTICIDES.
12349 APTIC NO. 30134

SOME ASPECTS OF THE METAL ION CHEMISTRY OF THE EARTH'S ATMOSPHERE.
12421 APTIC NO. 28891

BORDEAUX. STUDY OF ATMOSPHERIC POLLUTION IN THE BUILT-UP AREA.
12420 APTIC NO. 30109

RENAL FUNCTION DURING PROLONGED EXPOSURE TO HYPOXIA AND CARBON MONOXIDE. II. ELECTROLYTE HANDLING.
12577 APTIC NO. 29805

POTENTIOMETRIC METHODS

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971
12085 APTIC NO. 29680

A MEASUREMENT GRID FOR AIR POLLUTION IN THE MOUTH OF THE RIVER RHINE IN ROTTERDAM.
12333 APTIC NO. 29460

COMPARISON OF VARIOUS METHODS OF DETERMINING QUARTZ CONTENT IN NOXIOUS DUST.
12263 APTIC NO. 29546

A GAS ANALYSER FOR THE MEASUREMENT OF IMPURITIES IN AIR.
12277 APTIC NO. 29581

AN AUTOMATIC COULOMETRIC ANALYZER OF OZONE IN THE ATMOSPHERE.
12274 APTIC NO. 29757

THE REACTION KINETICS OF MERCAPTAN WITH OZONE IN THE PPM RANGE.
12497 APTIC NO. 30016

POULTRY

TERATOGENIC EFFECTS OF ANESTHETIC AGENTS: NITROUS OXIDE.
12584 APTIC NO. 28919

RESEARCH ON THE LEAD INTOXICATION OF THE GALLINACEANS.
12597 APTIC NO. 30033

POWER SOURCES

COMBUSTION REGULARITY A KEY TO SPARK-IGNITION ENGINE EMISSIONS REDUCTION? Preprint, Academia R. P. R., Bucharest, 15p., 1970. 4 refs. (Presented at the Internal Combustion Engines Conference, 2nd International, Bucharest (Rumania), 1970.)
12023 APTIC NO. 27641

THE EXHAUST GAS COMPOSITION AT THE FM GASOLINE ENGINE.
12046 APTIC NO. 29516

BUS AND VEHICLE FOR TRANSPORTATION WITH ELECTRIC DRIVE.
11987 APTIC NO. 29517

NITROGEN OXIDES ANALYSIS.
12042 APTIC NO. 29538

MARKET DEVELOPMENT IN GAS ECONOMY.
12010 APTIC NO. 29781

WHY LEAD IN GASOLINE? THE EFFECT OF LEAD CONTAINING ANTIKNOCK AGENTS FOR OTTO ENGINE FUELS.
11995 APTIC NO. 29782

PHYSICAL-CHEMICAL PROBLEMS OF AIR POLLUTION.
11996 APTIC NO. 29786

AMAZING HOT-GAS ENGINE POWERS CLEAN-AIR BUS.
12037 APTIC NO. 29876

EXPERIMENTS WITH ELECTRIC VEHICLES.
11989 APTIC NO. 29886

COUNTERMEASURES ON AUTOMOBILE EXHAUST GAS.
12050 APTIC NO. 29935

MEASUREMENT DATA OBTAINED FROM EXPERIMENTS WITH THE DYNAVANE HIGH CAPACITY DRY TYPE DUST SEPARATOR.
12108 APTIC NO. 28791

REQUIEM FOR THE PISTON ENGINE? Machine Design, 42(19):20-22, 24-26, 31, 33-34, Aug. 6, 1970. 4 refs.
12226 APTIC NO. 29468

PRACTICAL ANALYTICAL METHOD OF EXHAUST REFLUX EFFECT ON NOX EMISSION CONTROL.
12102 APTIC NO. 29499

AN EXPERIMENTAL STUDY ON THE PERFORMANCE OF A MULTIFUEL ENGINE. PART 3. AN ATTEMPT OF M-COMBUSTION APPLIED TO A SWIRL CHAMBER.
12183 APTIC NO. 29520

EMISSIONS FROM INTERNAL COMBUSTION ENGINE.
12225 APTIC NO. 29531

EXHAUST GAS CLEANER FOR DIESEL ENGINES.
12221 APTIC NO. 29533

TRANSPORTATION EMISSIONS.
12175 APTIC NO. 29605

THE AUTOMOBILE AND AIR POLLUTION.
12186 APTIC NO. 29633

AN EXPERIMENT ON VALVE RECESSION BY NON-LEADED GASOLINE.
12222 APTIC NO. 29656

EFFECTS OF THE ADDITION OF BARIUM COMPOUND ON THE SMOKE CONCENTRATION OF DIESEL EXHAUST GAS.
12057 APTIC NO. 29696

NEW METHOD OF MANUFACTURING CATALYST FOR EXHAUST GAS.
12133 APTIC NO. 29733

INTERNAL COMBUSTION ENGINE EXHAUST SYSTEM.
12132 APTIC NO. 29836

ALMOST POLLUTION-FREE POWERPLANTS ARE SCHEDULED FOR EARLY 1975.
12092 APTIC NO. 29856

EXHAUST GAS PURIFIER.
12179 APTIC NO. 29905

STUDY ON AUTO EXHAUST.
12241 APTIC NO. 29909

EFFECTS OF WATER INJECTION IN INLET TUBE ON NO CONCENTRATION IN DIESEL EXHAUST.
12220 APTIC NO. 29911

MUFFLER FOR REMOVING PARTICULATE LEAD FROM EXHAUST GASES OF INTERNAL COMBUSTION ENGINES.
12168 APTIC NO. 29920

CAN ADDITIVES DECREASE DIESEL SMOKE? Power, 114(8):60, Aug. 1970.
12226 APTIC NO. 29468

WASTE GAS RECIRCULATION IN COMBUSTION ENGINES, PRIMARILY DIESEL ENGINES.
12181 APTIC NO. 29962

FIRST RESULTS WITH THE M.A.N.-EXPERIMENTAL GAS TURBINE FOR COMMERCIAL VEHICLES.
12131 APTIC NO. 30088

EXHAUST GAS EVALUATION BY AIR RATIO COEFFICIENTS.
12278 APTIC NO. 29638

GAS CHROMATOGRAPHIC ANALYSIS OF BENZENE AND TOLUENE IN AUTOMOBILE EXHAUST GAS.
12295 APTIC NO. 29907

QUANTITATIVE ALDEHYDE DETERMINATION IN THE AIR OF WORKING PLACES.
12317 APTIC NO. 30023

A REPORT OF THE PERIODIC MEASUREMENT OF SOOT AND DUST, AND SULFUR OXIDES IN THE AIR AROUND THE HOSPITAL.
12381 APTIC NO. 29794

CALCULATION OF A JET AXIS IN A DRIFTING FLOW.
12507 APTIC NO. 30042

UNLEADED GASOLINE AND SMOG-FREE AUTOS--HOW AND WHY.
12644 APTIC NO. 30035

PRECIPITATION

A COMPREHENSIVE SAMPLING SYSTEM FOR STUDYING THE RELATION BETWEEN VISIBILITY, METEOROLOGICAL PARAMETERS AND ATMOSPHERIC POLLUTION.
12276 APTIC NO. 30082

LEAD POLLUTION AND PHOTOCHEMICAL SMOG IN TOKYO.
12376 APTIC NO. 29647

MEASUREMENT OF ATMOSPHERIC LEVELS OF PESTICIDES.
12392 APTIC NO. 29812

LEAD CONCENTRATION IN YOKOHAMA AIR.
12399 APTIC NO. 29814

DISTRIBUTION OF LEAD IN THE AIR NEAR CITY ROADS.
12388 APTIC NO. 29918

THE TENDENCY OF AIR POLLUTION AT NAGOYA CITY OBSERVED FROM THE WEIGHT OF FALLING DUST.
12396 APTIC NO. 30076

REPLY.
12411 APTIC NO. 29470

COLLECTION EFFICIENCY OF WATER DROPLETS IN AGCL AEROSOL.
12430 APTIC NO. 29687

SCAVENGING IN PERSPECTIVE.
12422 APTIC NO. 29688

PRIORITIES IN SCAVENGING RESEARCH.
12419 APTIC NO. 29689

SCAVENGING OF TRACER IN SEVERE STORMS.
12417 APTIC NO. 29691

INTERACTIONS OF CLOUD CONDENSATION NUCLEI AND ICE NUCLEI WITH CLOUD AND PRECIPITATION ELEMENTS: A REVIEW.
12443 APTIC NO. 29692

IN-CLOUD SCAVENGING ANALYSIS FROM COSMOGENIC RADIONUCLIDE MEASUREMENTS.
12440 APTIC NO. 29694

STABLE ELEMENTS OF THE ATMOSPHERE AS TRACERS OF PRECIPITATION SCAVENGING.
12445 APTIC NO. 29705

CONCENTRATION VARIATION OF SOME TRACE METALS IN PRECIPITATION FROM GREAT PLAINS THUNDERSTORMS.
12457 APTIC NO. 29706

SCAVENGING BY SNOW AND ICE CRYSTALS.
12456 APTIC NO. 29707

SCAVENGING OF SOLUBLE DYE PARTICLES BY RAIN.
12414 APTIC NO. 29708

COLLECTION EFFICIENCIES OF RAINDROPS FOR SUBMICRON PARTICULATES.
12404 APTIC NO. 29709

COLLECTION EFFICIENCY IN WASHOUT BY RAIN.
12406 APTIC NO. 29710

SCAVENGING OF AEROSOL PARTICLES BY SPRAYS.
12437 APTIC NO. 29711

CONTINUOUS CHARGED CLOUD-PARTICLE SAMPLER.
12451 APTIC NO. 29712

AUTOMATIC SEQUENTIAL RAIN SAMPLER FOR SCAVENGING STUDIES.
12423 APTIC NO. 29741

ATMOSPHERIC REACTIONS AND SCAVENGING PROCESSES.
12426 APTIC NO. 29774

PARTICLE AND DEUTERIUM CONTENT IN SNOW.
12449 APTIC NO. 29775

EFFECT OF SOLUBILITIES OF GASES ON THEIR SCAVENGING BY RAINDROPS.
12442 APTIC NO. 29780

CARBON MONOXIDE IN RAINWATER.
12460 APTIC NO. 29880

TRACE ELEMENTS IN ATMOSPHERIC PRECIPITATION AROUND THE OTKAZNOE RESERVOIR.
12432 APTIC NO. 29910

ATTACHMENT OF TRACE SUBSTANCES ON ATMOSPHERIC AEROSOLS.
12409 APTIC NO. 30046

ON PLUMBIC POLLUTION OF MUNICIPAL ATMOSPHERE--BEHAVIORS OF PLUMBIC COMPOUND AS AEROSOL.
12431 APTIC NO. 30073

SOME RESULTS OF LIDAR PROBING OF THE TROPOSHERE.
12434 APTIC NO. 30105

BORDEAUX. STUDY OF ATMOSPHERIC POLLUTION IN THE BUILT-UP AREA.
12420 APTIC NO. 30109

LEAD MEN HEADING TOWARD DESTRUCTION--SPREADING OMINOUS METAL POLLUTIONS.
12569 APTIC NO. 29789

AIR POLLUTION AND ATMOSPHERIC CORROSION.
12613 APTIC NO. 29222

PRESSURE (ATMOSPHERIC)

EFFECTS OF ATMOSPHERIC CONDITIONS ON AUTOMOBILE EXHAUST GAS COMPOSITIONS.
12461 APTIC NO. 29893

EFFECTS OF ATMOSPHERIC FACTORS AND OF SO2 AND AIRBORNE DUST EMISSIONS ON INTRABRONCHIAL FLOW RESISTANCE AND INTRATHORACAL GAS VOLUME OF SOUND AND SICK MEN.
12571 APTIC NO. 29048

PRIMARY METALLURGICAL PRO

HEAVY METAL POLLUTION IN THE ONAHAMA INDUSTRIAL AREA. 1ST REPORT. DISTRIBUTION OF HEAVY METALS IN SOIL.
12006 APTIC NO. 29539

ABOUT THE PROBLEM OF REPRESENTATIVE SAMPLING IN THE CASE OF WET SANDBLASTING.
12033 APTIC NO. 29542

AIR POLLUTION BY LEAD AND ZINC IN THE AREA OF COMBINED METALLURGICA WORKS AND ITS INFLUENCE ON VEGETATION AND SOIL.
12031 APTIC NO. 29572

PHYSICAL-CHEMICAL PROBLEMS OF AIR POLLUTION.
11996 APTIC NO. 29786

INVESTIGATION OF HEAVY METAL POLLUTION IN IWAKI CITY.
12087 APTIC NO. 29787

TWO NEW PROCESSES FOR RECOVERY OF SULPHUR OXIDES FROM SMELTER GASES.
12207 APTIC NO. 29200

DUST COLLECTOR FOR ELECTRIC FURNACE MANUFACTURING FERROALLOY.
12123 APTIC NO. 29481

HEAT EXTRACTION AIDS DEPOLLUTION OF GASES AND WATER IN CHEVROLET FOUNDRY.
12097 APTIC NO. 29523

SMELTER POLLUTION CONTROL--FACTS AND PROBLEMS.
12076 APTIC NO. 29622

DEVELOPMENT OF GAS PURIFICATION INSTALLATIONS FOR ELECTRIC MELTING FURNACES.
12204 APTIC NO. 29740

BAGHOUSE OPERATION AT THE WHITING, INDIANA PLANT OF THE FEDERATED METALS DIVISION AMERICAN SMELTING AND REFINING COMPANY.
12107 APTIC NO. 29772

REMOVAL OF CHLORINE FROM GASES.
12177 APTIC NO. 29802

THE NEW DUPLEX IRON MELTING PLANT AT THE M. BUSCH KG IN WEHRSTAPEL.
12094 APTIC NO. 29861

REMOVAL OF BROWN FUME FROM WASTE GASES OF OPEN HEARTH FURNACE OXYGEN STEELMAKING PROCESS.
12194 APTIC NO. 29945

AIR FILTRATION SYSTEM FOR ELECTRIC FURNACE SWITCH GEAR AT LUKENS STEEL.
12065 APTIC NO. 30018

ON A DUST-COLLECTING DEVICE FOR A FERROSILICON FURNACE.
12219 APTIC NO. 30086

SUMMARY OF H2SO4 MANUFACTURE.
12068 APTIC NO. 30099

TFE-FLUOROCARBON FIBER FILTER BAGS--IT COSTS MORE TO GO FIRST CLASS.
12109 APTIC NO. 30121

LEAD SMELTING PLANT CONTROLS AIR EMISSIONS.
12069 APTIC NO. 30124

ANALYZERS FOR MONITORING AIR QUALITY IN POLLUTION.
12272 APTIC NO. 29634

MEASUREMENT OF GASEOUS AND PARTICULATE FLUORINE EMISSIONS.
12322 APTIC NO. 29738

PARALLEL DETERMINATION OF NICKEL AND COBALT IN URINE AND ATMOSPHERE.
12300 APTIC NO. 29953

TESTS OF REPRESENTATIVE SPECIMENS OF CRYSTALLINE SILICA CONTAINED IN THE ATMOSPHERE OF INDUSTRIAL PLANTS.
12370 APTIC NO. 29553

BENZPYRENE AND OTHER AROMATIC HYDROCARBONS IN THE DUST OF POLISH TOWNS.
12385 APTIC NO. 29569

POLLUTIONS AND TOKYO METROPOLITAN GOVERNMENT.
12365 APTIC NO. 29973

DISSIPATION AND PRECIPITATION OF DUST EMITTED BY A STEELWORKS.
12466 APTIC NO. 29829

DISSIPATION OF SO2 GENERATED IN A STEELWORK INTO THE GROUND LAYER OF THE ATMOSPHERE.
12467 APTIC NO. 29867

ITAI-ITAI (OUCH-OUCH) DISEASE AND CADMIUM POLLUTION IN JAPAN.
12581 APTIC NO. 29673

EFFECT OF AIR AND WATER POLLUTION ON AGRICULTURAL PRODUCTS BY CD, PB, ZN ATTRIBUTED TO MINE REFINERY IN ANNAKA CITY, GUNMA PREFECTURE.
12601 APTIC NO. 27489

THE COSTS FOR MAINTENANCE OF CLEAN AIR. THE INFLUENCE OF SOCIAL COSTS ON THE SELECTION OF AN INDUSTRIAL SITE.
12633 APTIC NO. 29923

HOW THE LAWS AND AGENCIES AFFECT YOU.
12641 APTIC NO. 29113

PRESENT SITUATION OF ADMINISTRATION CONCERNING POLLUTIONS.
12648 APTIC NO. 29598

POLLUTIONS PREVENTION PLAN FOR CHIBA AND ICHIHARA CITIES IN CHIBA PREFECTURE.
12650 APTIC NO. 29813

PROCESS MODIFICATION

COMBUSTION REGULARITY A KEY TO SPARK-IGNITION ENGINE EMISSIONS REDUCTION? Preprint, Academia R. P. R., Bucharest, 15p., 1970. 4 refs. (Presented at the Internal Combustion Engines Conference, 2nd International, Bucharest (Rumania), 1970.)
12023 APTIC NO. 27641

CONSIDERATIONS IN THE CONSTRUCTION OF LARGE REFUSE INCINERATORS.
12026 APTIC NO. 29547

PROBLEMS OF AERATION OF THE CRANKCASE OF RECIPROCATING ENGINES WITH AN OTTO WORK CYCLE.
12009 APTIC NO. 29721

EMISSION OF AIR POLLUTANTS FROM AIRCRAFT JET ENGINES.
12035 APTIC NO. 29734

SELF-IGNITION OF GASEOUS FUELS THROUGH THE HEATING EFFECT OF A WAST GAS STREAM.
11998 APTIC NO. 29739

EXPERIMENTAL STUDY ON PLASTICS INCINERATION.
12017 APTIC NO. 29841

STUDY OF THE COMBUSTION OF PARTLY PRE-MIXED LAMINAR NATURAL GAS FLAMES.
12021 APTIC NO. 29948

TAKING ANOTHER LOOK BEFORE WE TAKE THE LEAD OUT.
11997 APTIC NO. 30067

THE SE-DUCT--AN IDEAL SOLUTION FOR GAS HEATERS.
12002 APTIC NO. 30132

MEASUREMENT DATA OBTAINED FROM EXPERIMENTS WITH THE DYNAVANE HIGH CAPACITY DRY TYPE DUST SEPARATOR.
12108 APTIC NO. 28791

CARBON MONOXIDE AS A COMBUSTION CONTROL PARAMETER.
12072 APTIC NO. 29471

EXPERIMENTS CONCERNING STOICHIOMETRIC COMBUSTION IN OIL-FIRED FURNACES OF FRENCH POWER PLANTS.
12090 APTIC NO. 29513

VENTILATION AND EXPLOSION EXPERIMENTS IN A WATER-TUBE BOILER OF A POWER PLANT.
12091 APTIC NO. 29514

AIR POLLUTION: CONTROLLED OPERATION OF A NSSC RECOVERY FURNACE.
12127 APTIC NO. 29621

EMISSION CONTROL BY EXHAUST MANIFOLD REACTOR--AN INITIAL STUDY FOR SMALL ENGINES.
12163 APTIC NO. 29629

POLLUTION REGULATIONS AND THEIR EFFECT ON VEHICLE PREPARATION.
12112 APTIC NO. 29659

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

EXHAUST SYSTEM.
12165 APTIC NO. 29723

DEVELOPMENT OF GAS PURIFICATION INSTALLATIONS FOR ELECTRIC MELTING FURNACES.
12204 APTIC NO. 29740

GASIFICATION OF HYDROCARBONS.
12137 APTIC NO. 29779

CALCULATION OF EXCESS AIR FOR COMBUSTION PROCESSES USING O2-TO-N2 RATIO.
12176 APTIC NO. 29796

MODERN OIL BURNING TECHNOLOGY AS DISPLAYED ON THE INTHERM IN STUTTGART AND THE 6.ISH IN FRANKFURT 1971.
12187 APTIC NO. 29824

AIR POLLUTION TEST METHODS COMPARED IN INCINERATOR EVALUATION PROGRAM.
12119 APTIC NO. 29837

PRINCIPLES OF COLLECTING PARTICULATES: DRY, WET OR ELECTROSTATICALLY.
12232 APTIC NO. 29838

EXPERIMENTAL RESEARCH ON LOW EXCESS AIR COMBUSTION IN BOILER BURNING HEAVY OIL ONLY.
12142 APTIC NO. 29860

ATTEMPT AT A THERMODYNAMIC SOLUTION: AUTOMOBILE EXHAUST GASES.
12147 APTIC NO. 29906

STUDIES ON AIR POLLUTION CONTROL BY ADDITIVE INJECTION. PART II - PREVENTION OF CLOGGING AT HIGH TEMPERATURE HEATING SURFACE OF BOILER BY ADDING MG(OH)2 POWDER.
12075 APTIC NO. 29941

HIGH-CONCENTRATION SULFUR DIOXIDE FROM CALCINING PYRITES IN THE DKSM FURNACE.
12157 APTIC NO. 29982

COMBUSTION OF WASTES CENTERING AROUND REMOVAL OF NOXIOUS GAS.
12077 APTIC NO. 29985

CONTROL OF POLLUTANT EMISSION AND SULPHURIC ACID CORROSION FROM COMBUSTION OF RESIDUAL FUEL OIL. PART I: LOW-PRESSURE HEATING BOILERS WITH MECHANICAL ATOMIZING BURNERS.
12164 APTIC NO. 30055

LOW POWER HOUSEHOLD OIL BURNING INSTALLATIONS. HOW THEY FUNCTION, PROPOSAL FOR A METHOD OF REGULATING THEM.
12079 APTIC NO. 30108

LOSS OF MERCURY FROM CHLORALKALI PLANTS.
12120 APTIC NO. 30117

JIS ANALYTICAL PROCESS FOR NITROGEN OXIDES IN WASTE GAS.
12355 APTIC NO. 29677

NO-X CONTROL FROM STATIONARY SOURCES.
12427 APTIC NO. 29764

PROPANES

DESULFURIZATION OF LIQUEFIED PROPANE GAS. MOLECULAR SIEVE PROCESS.
12053 APTIC NO. 29617

THE EFFECT OF CATALYST POISONS ON THE ACTIVITY OF CARBON MONOXIDE SHIFT CATALYSTS.
12212 APTIC NO. 29944

EXHAUST EMISSIONS FROM HEAVY DUTY VEHICLES.
12332 APTIC NO. 27631

ANALYSIS OF HC OF LOW GRADE IN ATMOSPHERE.
12391 APTIC NO. 29482

PROPELLER AIRCRAFT

EMISSION OF AIR POLLUTANTS FROM AIRCRAFT JET ENGINES.
12035 APTIC NO. 29734

PROPENES

THE EFFECT OF CATALYST POISONS ON THE ACTIVITY OF CARBON MONOXIDE SHIFT CATALYSTS.
12212 APTIC NO. 29944

PROPOSALS

PLAIN TALK FOR EQUIPMENT SELLERS--AND BUYERS.
12089 APTIC NO. 29618

PROTEINS

A FINDING CONCERNING A BASIC INVESTIGATION METHOD ON ODOR POLLUTION SEEN FROM ACTUAL EXPERIENCE. REPORT NO. 2 ON THE STUDIES OF OBNOXIOUS ODOR.
12294 APTIC NO. 29508

A FEW OBSERVATION ON THE GENERATION MECHANISM OF OBNOXIOUS ODOR.
12517 APTIC NO. 29649

PATHOLOGICAL STUDY ON THE EXPERIMENTAL RABBITS AT AIR-POLLUTED AREA IN YOKKAICHI.
12590 APTIC NO. 29502

PLASMA VOLUME AND VASCULAR PERMEABILITY DURING HYPOXIA AND CARBON MONOXIDE EXPOSURE.
12582 APTIC NO. 29614

FOUR-ALKYL LEAD AND ENVIRONMENTAL POLLUTION.
12588 APTIC NO. 29825

PUBLIC AFFAIRS

ON PUBLIC NUISANCE BY, AND ENVIRONMENTAL HYGIENE OF, PAINT MANUFACTURING INDUSTRY.
12059 APTIC NO. 29761

TEN YEARS OF AIR POLLUTION IN HOKKAIDO.
12367 APTIC NO. 29727

POLLUTIONS AND TOKYO METROPOLITAN GOVERNMENT.
12365 APTIC NO. 29973

PRESENT SITUATION OF ADMINISTRATION CONCERNING POLLUTIONS.
12648 APTIC NO. 29598

CHIBA PREFECTURAL ORDINANCE ON POLLUTIONS CONTROL AND ENFORCEMENT REGULATION OF ORDINANCE.
12649 APTIC NO. 29679

CASTING WORK ENVIRONMENTS AND PUBLIC NUISANCE.
12655 APTIC NO. 29975

AIR POLLUTION--THE STATUS TODAY.
12681 APTIC NO. 28923

NOBODY BREATHES FRESH AIR. FACTS AND ARGUMENTS ABOUT AIR POLLUTION.
12677 APTIC NO. 29459

PUBLIC INFORMATION

CHIBA PREFECTURAL ORDINANCE ON POLLUTIONS CONTROL AND ENFORCEMENT REGULATION OF ORDINANCE.
12649 APTIC NO. 29679

NOBODY BREATHES FRESH AIR. FACTS AND ARGUMENTS ABOUT AIR POLLUTION.
12677 APTIC NO. 29459

PULMONARY FUNCTION

THE IRRITANT POTENTIAL OF POLLUTANTS IN THE ATMOSPHERE.
12271 APTIC NO. 29751

CIGARETTE SMOKING: OBJECTIVE EVIDENCE FOR LUNG DAMAGE IN TEEN-AGERS.
12342 APTIC NO. 30097

PULMONARY COMPLICATIONS OF ASBESTOS EXPOSURE.
12552 APTIC NO. 29221

EFFECTS OF LOW CARBON MONOXIDE CONCENTRATIONS IN MAN.
12533 APTIC NO. 29609

ITAI-ITAI (OUCH-OUCH) DISEASE AND CADMIUM POLLUTION IN JAPAN.
12581 APTIC NO. 29673

THE RESEARCH FOR THE EFFECTS OF AIR POLLUTION ON THE HUMAN BODY. (II) THE RELATIONSHIP BETWEEN ASTHMA-LIKE DISEASES OF THE SCHOOL CHILDREN AND AIR POLLUTION IN KITAKYUSHU.
12524 APTIC NO. 29683

EFFECTS OF SOOT AND SMOKE ON THE HEALTH OF SCHOOL CHILDREN.
12556 APTIC NO. 29791

STUDIES ON PROGNOSIS OF CHRONIC BRONCHITIS.
12387 APTIC NO. 29916

SOME HEALTH SURVEY RESULTS OF UNDERGROUND GARAGE WORKERS.
12568 APTIC NO. 30074

CHANGES IN AIRWAYS CONDUCTANCE ON SMOKING A CIGARETTE.
12540 APTIC NO. 30135

PULMONARY RESISTANCE

THE IRRITANT POTENTIAL OF POLLUTANTS IN THE ATMOSPHERE.
12271 APTIC NO. 29751

CHANGES IN AIRWAYS CONDUCTANCE ON SMOKING A CIGARETTE.
12540 APTIC NO. 30135

PULSE RATE

INTRODUCTION AND GENERAL DESCRIPTION OF THE STUDY AND OF THE PROCEDURES FOR PROLONGED EXPOSURE TO CARBON MONOXIDE AND HYPOXIA.
12530 APTIC NO. 29503

PULVERIZED FUELS

VENTILATION AND EXPLOSION EXPERIMENTS IN A WATER-TUBE BOILER OF A POWER PLANT.
12091 APTIC NO. 29514

ELECTRIC DUST COLLECTION DEVICE.
12151 APTIC NO. 29819

ACTIVATED CARBON INDUSTRY AND PROBLEMS IN FUTURE - SPHERICAL ACTIVATED CARBON FROM COAL.
12235 APTIC NO. 29942

PYRENES

PHYSICAL-CHEMICAL PROBLEMS OF AIR POLLUTION.
11996 APTIC NO. 29786

EXHAUST GAS CLEANER FOR DIESEL ENGINES.
12221 APTIC NO. 29533

STUDY OF POLYCYCLIC HYDROCARBONS FIXED ON ATMOSPHERIC DUSTS.
12270 APTIC NO. 29851

A SHORT TERM DETERMINATION OF BENZO(A)PYRENE AND BENZO(K) FLUORANTHENE IN AIR POLLUTANTS.
12319 APTIC NO. 29965

BENZPYRENE AND OTHER AROMATIC HYDROCARBONS IN THE DUST OF POLISH TOWNS.
12385 APTIC NO. 29569

THE 3,4-BENZPYRENE CONTENT OF THE AIR IN TWO INDUSTRIAL AREAS.
12400 APTIC NO. 29586

TEN YEARS OF AIR POLLUTION IN HOKKAIDO.
12367 APTIC NO. 29727

EVOLUTION OF THE ATMOSPHERIC CONTAMINATION IN MADRID IN 1969.
12371 APTIC NO. 30089

ON THE PROBLEM OF THE COMBINED EFFECTS OF SULFUR DIOXIDE AND BENZPYRENE ON THE ORGANISMS OF TEST ANIMALS.
12583 APTIC NO. 29585

THE ROLE OF TRACE METALS IN CHEMICAL CARCINOGENESIS: ASBESTOS CANCERS.
12543 APTIC NO. 29993

THE PRESENT RESULTS OF DETERMINATIONS OF 3,4-BENZPYRENE IN THE AIR OVER BUDAPEST.
12631 APTIC NO. 29590

PYRIDINES

COLLECTION OF LEGISLATIONS RELATED WITH MITI CONCERNING POLLUTIONS.
12646 APTIC NO. 29504

PYROLYSIS

COMBUSTION OF WASTES CENTERING AROUND REMOVAL OF NOXIOUS GAS.
12077 APTIC NO. 29985

THERMAL AND DIFFUSIONAL EFFECTS IN NONCATALYTIC SOLID GAS REACTIONS.
12522 APTIC NO. 29612

Q

QUARTZ

MEASURES TAKEN BY THE REGIONAL SOCIAL SECURITY ADMINISTRATION OF LIMOGES TO REDUCE THE RISKS OF SILICOSIS.
12171 APTIC NO. 29561

COMPARISON OF VARIOUS METHODS OF DETERMINING QUARTZ CONTENT IN NOXIOUS DUST.
12263 APTIC NO. 29546

RESULTS OF COMPARATIVE TESTS ON QUARTZ CONTENT OBTAINED FROM LABORATORIES USING VARIOUS TECHNIQUES OF DETERMINATION.
12327 APTIC NO. 29552

TESTS OF REPRESENTATIVE SPECIMENS OF CRYSTALLINE SILICA CONTAINED IN THE ATMOSPHERE OF INDUSTRIAL PLANTS.
12370 APTIC NO. 29553

TWO OBSERVATIONS IN A FLUORSPAR QUARRY.
12535 APTIC NO. 29565

STUDIES ON THE INFLUENCE OF AIR POLLUTION ON THE HEALTH OF THE PEOPLE AT BELOSLAV, DISTRICT OF VARNA, PEOPLE S REPUBLIC OF BULGARIA.
12557 APTIC NO. 29573

COMPARATIVE STUDY OF PERMISSIBLE LIMITS OF AIR DUSTINESS IN VARIOUS COUNTRIES.
12639 APTIC NO. 29543

QUENCHING

FLUOROMETRIC DETERMINATION OF BROMINE: APPLICATION TO MEASUREMENT OF BROMINE AEROSOLS.
12255 APTIC NO. 29811

THE ULTRA-VIOLET PHOTOLYSIS OF OZONE IN THE PRESENCE OF MOLECULAR OXYGEN.
12500 APTIC NO. 29778

CHEMISTRY OF SINGLET OXYGEN. X. CAROTENOID QUENCHING PARALLELS BIOLOGICAL PROTECTION.
12546 APTIC NO. 29716

QUESTIONNAIRES

AIR POLLUTION CONTROL SYSTEM (3).
12401 APTIC NO. 29795

THE RESEARCH FOR THE EFFECTS OF AIR POLLUTION ON THE HUMAN BODY. (II) THE RELATIONSHIP BETWEEN ASTHMA-LIKE DISEASES OF THE SCHOOL CHILDREN AND AIR POLLUTION IN KITAKYUSHU.
12524 APTIC NO. 29683

STUDIES ON PROGNOSIS OF CHRONIC BRONCHITIS.
12587 APTIC NO. 29916

SOME HEALTH SURVEY RESULTS OF UNDERGROUND GARAGE WORKERS.
12568 APTIC NO. 30074

COMPARATIVE STUDY OF CERTAIN PROVISIONS IN MEMBER STATES FOR CONTROLLING AIR POLLUTION.
12656 APTIC NO. 30052

R

RABBITS

PATHOLOGICAL STUDY ON THE EXPERIMENTAL RABBITS AT AIR-POLLUTED AREA IN YOKKAICHI.
12590 APTIC NO. 29502

RADIATION MEASURING SYSTE

SOURCE SAMPLING OF ATMOSPHERIC CONTAMINANTS.
12248 APTIC NO. 30118

PROGRESS REPORT. JANUARY-DECEMBER 1969.
12555 APTIC NO. 28850

RADIOACTIVE RADIATION

EFFICIENCY OF FILTERS FOR RADIOACTIVE AEROSOL.
12155 APTIC NO. 29768

PERFORMANCE OF CHARCOAL-IMPREGNATED FILTER PAPER TYPE CP-20 FOR COLLECTING AIRBORNE RADIOIODINE.
12185 APTIC NO. 29870

METHOD TO ARREST AND REMOVE WHITE SMOKE PRODUCED FROM MOLTEN ZINC PLATING PROCESS.
12135 APTIC NO. 29940

COMPARISON OF VARIOUS METHODS OF DETERMINING QUARTZ CONTENT IN NOXIOUS DUST.
12263 APTIC NO. 29546

RESULTS OF COMPARATIVE TESTS ON QUARTZ CONTENT OBTAINED FROM LABORATORIES USING VARIOUS TECHNIQUES OF DETERMINATION.
12327 APTIC NO. 29552

ESTIMATION OF VARIANCE OF AIR SAMPLER DATA BASED ON REPLICATE SAMPLES.
12314 APTIC NO. 29642

AN ASPIRATION INSTALLATION OF HIGH EFFICIENCY FOR COLLECTING SAMPLES OF RADIOACTIVE AEROSOLS FROM THE ATMOSPHERE.
12318 APTIC NO. 29670

INVESTIGATION OF ACTIVATION ANALYSIS OF TRACE MERCURY IN GAS BY RADIOISOTOPE TRACER METHOD.
12328 APTIC NO. 29770

STUDIES ON LEAD CHROMATE OBTAINED FROM TETRAALKYL LEAD IN LEADED GASOLINE. I. X-RAY DIFFRACTION TESTS OF THE LEAD CHROMATE CRYSTALS.
12296 APTIC NO. 29810

PRODUCTION OF GASES OF KNOWN SPECIFIC ACTIVITY IN A REACTOR FOR CALIBRATING GASEOUS EFFLUENT MONITORS.
12264 APTIC NO. 29848

DETERMINATION OF IRON, CHROMIUM, COBALT, NICKEL, AND SCANDIUM IN ASBESTOS BY NEUTRON ACTIVATION ANALYSIS.
12292 APTIC NO. 30129

POSSIBLE CORRELATION BETWEEN ATMOSPHERIC OZONE CONTENT AND COSMIC RAY INTENSITY VARIATIONS.
12369 APTIC NO. 30031

THE PREVENTION OF POLLUTION.
12416 APTIC NO. 29623

PRIORITIES IN SCAVENGING RESEARCH.
12419 APTIC NO. 29689

PARTICLE AND DEUTERIUM CONTENT IN SNOW.
12449 APTIC NO. 29775

TOWARD A RATIONAL POWER POLICY: RECONCILING NEEDS FOR ENERGY AND ENVIRONMENTAL PROTECTION.
12403 APTIC NO. 29986

CHEMICAL PROCESSES AT THE AIR-SEA INTERFACE: THE BEHAVIOR OF FLUORINE.
12468 APTIC NO. 30126

PLASMA VOLUME AND VASCULAR PERMEABILITY DURING HYPOXIA AND CARBON MONOXIDE EXPOSURE.
12582 APTIC NO. 29614

RADIOACTIVE TRACERS

INVESTIGATION OF ACTIVATION ANALYSIS OF TRACE MERCURY IN GAS BY RADIOISOTOPE TRACER METHOD.
12328 APTIC NO. 29770

PARTICLE AND DEUTERIUM CONTENT IN SNOW.
12449 APTIC NO. 29775

CHEMICAL PROCESSES AT THE AIR-SEA INTERFACE: THE BEHAVIOR OF FLUORINE.
12468 APTIC NO. 30126

PLASMA VOLUME AND VASCULAR PERMEABILITY DURING HYPOXIA AND CARBON MONOXIDE EXPOSURE.
12582 APTIC NO. 29614

RADIOGRAPHY

NITROGEN DIOXIDE.
11988 APTIC NO. 29567

STUDIES ON THE INFLUENCE OF AIR POLLUTION ON THE HEALTH OF THE PEOPLE AT BELOSLAV, DISTRICT OF VARNA, PEOPLE S REPUBLIC OF BULGARIA.
12557 APTIC NO. 29573

ITAI-ITAI (OUCH-OUCH) DISEASE AND CADMIUM POLLUTION IN JAPAN.
12581 APTIC NO. 29673

STUDY ON THE EFFECTS OF AIR POLLUTION ON HUMAN BODY--WITH SPECIAL REFERENCE TO OBJECTIVE, COMPARATIVE STUDY OF ALL THE INHABITANTS BY CHEST X-RAY RINDINGS.
12554 APTIC NO. 29904

RADIOLOGICAL HEALTH

PROGRESS REPORT. JANUARY-DECEMBER 1969.
12555 APTIC NO. 28850

RADIOSONDES

THE EFFECT OF ATMOSPHERIC CONDITIONS ON PLUME RISE.
12455 APTIC NO. 29865

DISCUSSIONS DEPTH OF THE BOUNDARY LAYER.
ERROR

RAIN

A COMPREHENSIVE SAMPLING SYSTEM FOR STUDYING THE RELATION BETWEEN VISIBILITY, METEOROLOGICAL PARAMETERS AND ATMOSPHERIC POLLUTION.
12276 APTIC NO. 30082

LEAD POLLUTION AND PHOTOCHEMICAL SMOG IN TOKYO.
12376 APTIC NO. 29647

MEASUREMENT OF ATMOSPHERIC LEVELS OF PESTICIDES.
12392 APTIC NO. 29812

LEAD CONCENTRATION IN YOKOHAMA AIR.
12399 APTIC NO. 29814

DISTRIBUTION OF LEAD IN THE AIR NEAR CITY ROADS.
12388 APTIC NO. 29918

THE TENDENCY OF AIR POLLUTION AT NAGOYA CITY OBSERVED FROM THE WEIGHT OF FALLING DUST.
12396 APTIC NO. 30076

SCAVENGING IN PERSPECTIVE.
12422 APTIC NO. 29688

IN-CLOUD SCAVENGING ANALYSIS FROM COSMOGENIC RADIONUCLIDE MEASUREMENTS.
12440 APTIC NO. 29694

STABLE ELEMENTS OF THE ATMOSPHERE AS TRACERS OF PRECIPITATION SCAVENGING.
12445 APTIC NO. 29705

CONCENTRATION VARIATION OF SOME TRACE METALS IN PRECIPITATION FROM GREAT PLAINS THUNDERSTORMS.
12457 APTIC NO. 29706

SCAVENGING OF SOLUBLE DYE PARTICLES BY RAIN.
12414 APTIC NO. 29708

COLLECTION EFFICIENCIES OF RAINDROPS FOR SUBMICRON PARTICULATES.
12404 APTIC NO. 29709

COLLECTION EFFICIENCY IN WASHOUT BY RAIN.
12406 APTIC NO. 29710

AUTOMATIC SEQUENTIAL RAIN SAMPLER FOR SCAVENGING STUDIES.
12423 APTIC NO. 29741

EFFECT OF SOLUBILITIES OF GASES ON THEIR SCAVENGING BY RAINDROPS.
12442 APTIC NO. 29780

CARBON MONOXIDE IN RAINWATER.
12460 APTIC NO. 29880

ON PLUMBIC POLLUTION OF MUNICIPAL ATMOSPHERE--BEHAVIORS OF PLUMBIC COMPOUND AS AEROSOL.
12431 APTIC NO. 30073

SOME RESULTS OF LIDAR PROBING OF THE TROPOSHERE.
12434 APTIC NO. 30105

BORDEAUX. STUDY OF ATMOSPHERIC POLLUTION IN THE BUILT-UP AREA
12420 APTIC NO. 30109

AIR POLLUTION AND ATMOSPHERIC CORROSION.
12613 APTIC NO. 29222

RATS

AIRBORNE INFLUENZA PR8-A VIRUS INFECTIONS IN ACTIVELY IMMUNIZED MICE.
12167 APTIC NO. 29718

STUDIES OF THE SIGNIFICANCE OF DUSTS AND GASES FOR THE PATHOLOGY OF INFECTIONS OF THE RESPIRATORY TRACT.
12529 APTIC NO. 29571

ON THE PROBLEM OF THE COMBINED EFFECTS OF SULFUR DIOXIDE AND BENZPYRENE ON THE ORGANISMS OF TEST ANIMALS.
12583 APTIC NO. 29585

EXPERIMENTAL STUDIES ON THE EFFECT OF SMALL DOSES OF LEAD AND SULFUR DIOXIDE.
12532 APTIC NO. 29588

HISTOPATHOLOGIC FINDINGS IN RATS EXPOSED TO AMBIENT AND FILTERED AIR.
12550 APTIC NO. 29715

EFFECT OF LONG-TERM JOINT ACTION OF CARBON MONOXIDE, NITROGEN DIOXIDE AND AMMONIUM ON REQUIREMENTS OF ALBINO RATS IN VITAMIN B6.
12572 APTIC NO. 29753

EXPERIMENTAL STUDIES ON THE HEALTH EFFECTS OF AUTO EXHAUST GAS IN LOW CONCENTRATIONS. (REPORT 1) PRELIMINARY EXPERIMENT.
12589 APTIC NO. 29921

THE ROLE OF TRACE METALS IN CHEMICAL CARCINOGENESIS: ASBESTOS CANCERS.
12543 APTIC NO. 29993

REACTION KINETICS

THE CALCULATION OF MIXED HYDROCARBON-OXYGENATED SOLVENT EVAPORATION.
12038 APTIC NO. 29526

EXPERIMENTAL STUDY ON PLASTICS INCINERATION.
12017 APTIC NO. 29841

JET AIRCRAFT AIR POLLUTANT PRODUCTION AND DISPERSION.
12016 APTIC NO. 30130

BASIC RESEARCH ON SMOKE DESULFURIZATION BY LIME-METALS, 2ND REPORT - EFFECT OF METAL ADDITION ON CALCINATION OF LIME.
12153 APTIC NO. 29080

BASIC RESEARCH ON SMOKE DESULFURIZATION BY LIME-METALS, 1ST REPORT - DESULFURIZATION EFFECT BY ADDITION OF METAL.
12154 APTIC NO. 29478

STUDY ON MECHANISM OF REACTION WITH SULFUR DIOXIDE OF LIMESTONE POWDER BLOWN INTO COMBUSTION GAS.
12146 APTIC NO. 29479

ADSORPTION OF SULFUR DIOXIDE GAS BY ACTIVATED CARBON OR MOLECULAR SIEVE.
12201 APTIC NO. 29497

METHOD TO REMOVE HARMFUL SUBSTANCES FROM STACK GAS BY-PRODUCING AMMONIUM SULFATE AND OTHERS (XV) - ACTIVATION ENERGY OF ACTIVATED CARBON FOR SO2 ADSORPTION.
12161 APTIC NO. 29648

CATALYTIC OXIDATION OF CARBON MONOXIDE IN THE PRESENCE OF RECENTLY SYNTHESIZED PLATINUM COMPLEXES.
12117 APTIC NO. 29896

INVESTIGATION OF HEAVY OIL DESULFURIZATION IN FIXED-BED CONTACT REACTORS.
12196 APTIC NO. 29931

THE EFFECT OF CATALYST POISONS ON THE ACTIVITY OF CARBON MONOXIDE SHIFT CATALYSTS.
12212 APTIC NO. 29944

CATALYST FOR HEAVY OIL DESULFURIZATION.
12224 APTIC NO. 29977

ON THE REACTIVITY OF AMINES WITH OZONE.
12190 APTIC NO. 29978

USE OF VANADIUM CATALYSTS IN PURIFYING INDUSTRIAL WASTE GASES FROM SULFUR DIOXIDE.
12087 APTIC NO. 29980

REACTOR DEVICE FOR HEAVY OIL DESULFURIZATION.
12149 APTIC NO. 29987

STUDY ON THE DIRECT DESULFURIZATION OF HEAVY OIL.
12159 APTIC NO. 29989

KINETICS OF RECOVERING SULFUR FROM THE SPENT SEED IN AN MHD POWER PLANT.
12118 APTIC NO. 30048

QUANTITATIVE ANALYSIS OF NO IN ATMOSPHERE - ON CHANGES IN SALTZMAN COEFFICIENT WITH CHANGE IN COMPOSITION OF SALTZMAN REAGENTS.
12308 APTIC NO. 29480

OXIDATION OF NITROGEN MONOXIDE.
12320 APTIC NO. 29676

SOME ASPECTS OF THE METAL ION CHEMISTRY OF THE EARTH'S ATMOSPHERE.
12421 APTIC NO. 28891

AN EXPERIMENTAL STUDY OF PHOTOCHEMICAL OXIDATION OF ORGANIC SUBSTANCES IN THE ATMOSPHERE.
12441 APTIC NO. 29681

DISSOCIATIVE ELECTRON ATTACHMENT PROCESSES IN SO2 AND NO2.
12444 APTIC NO. 30008

MECHANISM OF SINGLET MOLECULAR OXYGEN FORMATION FROM PHOTOLYSIS OF OZONE AT 2537 A.
12424 APTIC NO. 30110

EXPLOSIVE OXIDATION OF NITROUS OXIDE MIXED WITH OZONE.
12511 APTIC NO. 27268

IGNITION KINTICS IN HIGH-TEMPERATURE OXIDATION WITH NITROUS OXIDE IN SHOCK WAVES.
12509 APTIC NO. 29095

MOLECULAR ORBITAL STUDY OF NH2, NO2, AND NF2.
ERROR

INVESTIGATION OF NITRIC OXIDE FORMATION KINETICS IN COMBUSTION PROCESSES: THE HYDROGEN-OXYGEN-NITROGEN REACTION.
12477 APTIC NO. 29610

QUENCHING OF NAPHTHALENE LUMINESCENCE BY OXYGEN AND NITRIC OXIDE.
12495 APTIC NO. 29611

THERMAL AND DIFFUSIONAL EFFECTS IN NONCATALYTIC SOLID GAS REACTIONS.
12522 APTIC NO. 29612

CHEMICAL APPLICATIONS OF METASTABLE ARGON ATMOS.
12519 APTIC NO. 29632

THE REACTION OF OZONE WITH SOLID POLYSTYRENE.
12505 APTIC NO. 29666

INITIATION RATE FOR SHOCK-HEATED HYDROGEN-OXYGEN CARBON MONOXIDE- ARGON MIXTURES AS DETERMINED BY OH INDUCTION TIME MEASUREMENTS.
12490 APTIC NO. 29700

KINETICS OF THE REACTION BETWEEN THE SOLID SODIUM CARBONATE AND THE GASEOUS SULPHUR DIOXIDE. VI. STATISTICAL MOLECULAR MODEL OF THE EXCESS KINETIC FUNCTION.
12487 APTIC NO. 29702

RATES OF ENERGY TRANSFER FROM N2 A CUBED SIGMA(+) U TO VARIOUS MOLECULES. INITIAL AND FINAL QUANTUM STATES IN THE TRANSFER TO NOX SQUARED PI AND HG(6 1S SUB O), AND VIBRATIONAL RELAXATION OF N2 A CUBED SIGMA(+) U (V EQUALS 1) IN HELIUM.
12481 APTIC NO. 29750

THE ULTRA-VIOLET PHOTOLYSIS OF OZONE IN THE PRESENCE OF MOLECULAR OXYGEN.
12500 APTIC NO. 29778

KINETICS AND MECHANISMS OF THE VIBRATIONAL RELAXATION OF NOX2PI(V EQUALS 1) IN THE TEMPERATURE RANGE 100-433 K.
12474 APTIC NO. 29881

THE STUDY OF THE REACTION OF HYDROGEN SULPHIDE WITH ATOMIC OXYGEN USING EMISSION SPECTRUM.
12516 APTIC NO. 29884

SIMULTANEOUS ABSORPTION OF TWO GASES ACCOMPANIED BY REVERSIBLE INSTANTANEOUS CHEMICAL REACTIONS.
12504 APTIC NO. 29917

REDUCTION OF MAGNESIUM SULPHATE BY CARBON MONOXIDE.
12498 APTIC NO. 29943

THE REACTION KINETICS OF MERCAPTAN WITH OZONE IN THE PPM RANGE.
12497 APTIC NO. 30016

VIBRATIONAL EXCITATION AND COMPOUND STATES IN NO.
12510 APTIC NO. 30037

INTERNAL CONVERSION IN BENZENE, BENZENE-D6, AND SULFUR DIOXIDE.
12508 APTIC NO. 30063

ELECTRON ENERGY LOSS SPECTRA OF NO2 AND SO2.
12480 APTIC NO. 30079

DEGRADATION OF POLYMERS IN REACTIVE GASES.
12617 APTIC NO. 29472

REACTION MECHANISMS

MERCURY IN MAN.
12011 APTIC NO. 29643

JET AIRCRAFT AIR POLLUTANT PRODUCTION AND DISPERSION.
12016 APTIC NO. 30130

BASIC RESEARCH ON SMOKE DESULFURIZATION BY LIME-METALS, 2ND REPORT - EFFECT OF METAL ADDITION ON CALCINATION OF LIME.
12153 APTIC NO. 29080

BASIC RESEARCH ON SMOKE DESULFURIZATION BY LIME-METALS, 1ST REPORT - DESULFURIZATION EFFECT BY ADDITION OF METAL.
12154 APTIC NO. 29478

STUDY ON MECHANISM OF REACTION WITH SULFUR DIOXIDE OF LIMESTONE POWDER BLOWN INTO COMBUSTION GAS.
12146 APTIC NO. 29479

ADSORPTION OF SULFUR DIOXIDE GAS BY ACTIVATED CARBON OR MOLECULAR SIEVE.
12201 APTIC NO. 29497

ABSORPTION OF SULFUROUS ACID GAS BY WATER SOLUTION OF POTASSIUM PHOSPHATE.
12172 APTIC NO. 29731

CATALYTIC OXIDATION OF CARBON MONOXIDE IN THE PRESENCE OF RECENTLY SYNTHESIZED PLATINUM COMPLEXES.
12117 APTIC NO. 29896

CATALYTIC REDUCTION OF SULFUR DIOXIDE ON IRON-ALUMINA BIFUNCTIONAL CATALYSTS.
12152 APTIC NO. 30064

INFRARED SPECTROSCOPIC STUDY OF THE CATALYTIC OXIDATION OF CARBON MONOXIDE TO CARBON DIOXIDE ON MANGANESE DIOXIDE.
12105 APTIC NO. 30091

OXIDATION OF NITROGEN MONOXIDE.
12320 APTIC NO. 29676

SIMPLIFIED TECHNIQUES IN AIR POLLUTION MEASUREMENT.
12289 APTIC NO. 29771

PHOTOCHEMICAL SMOG.
12418 APTIC NO. 29672

AN EXPERIMENTAL STUDY OF PHOTOCHEMICAL OXIDATION OF ORGANIC SUBSTANCES IN THE ATMOSPHERE.
12441 APTIC NO. 29681

ATMOSPHERIC REACTIONS AND SCAVENGING PROCESSES.
12426 APTIC NO. 29774

PHOTOCHEMICAL SMOG AND ITS REACTION MECHANISM.
12459 APTIC NO. 29934

DISSOCIATIVE ELECTRON ATTACHMENT PROCESSES IN SO2 AND NO2.
12444 APTIC NO. 30008

THE ULTRA-VIOLET PHOTOLYSIS OF OZONE IN THE PRESENCE OF WATER VAPOUR.
12435 APTIC NO. 30012

MECHANISM OF SINGLET MOLECULAR OXYGEN FORMATION FROM PHOTOLYSIS OF OZONE AT 2537 A.
12424 APTIC NO. 30110

EXPLOSIVE OXIDATION OF NITROUS OXIDE MIXED WITH OZONE.
12511 APTIC NO. 27268

LASER-INDUCED VIBRATIONAL FLUORESCENCE IN NITROUS OXIDE.
12472 APTIC NO. 28910

IGNITION KINTICS IN HIGH-TEMPERATURE OXIDATION WITH NITROUS OXIDE IN SHOCK WAVES.
12509 APTIC NO. 29095

INVESTIGATION OF NITRIC OXIDE FORMATION KINETICS IN COMBUSTION PROCESSES: THE HYDROGEN-OXYGEN-NITROGEN REACTION.
12477 APTIC NO. 29610

QUENCHING OF NAPHTHALENE LUMINESCENCE BY OXYGEN AND NITRIC OXIDE.
12495 APTIC NO. 29611

THERMAL AND DIFFUSIONAL EFFECTS IN NONCATALYTIC SOLID GAS REACTIONS.
12522 APTIC NO. 29612

A FEW OBSERVATION ON THE GENERATION MECHANISM OF OBNOXIOUS ODOR.
12517 APTIC NO. 29649

THE REACTION OF OZONE WITH SOLID POLYSTYRENE.
12505 APTIC NO. 29666

METHANESULFENYL CHLORIDE. V. THE SPONTANEOUS DECOMPOSITION OF METHANESULFENYL CHLORIDE AND METHYLSULPUR TRICHLORIDE.
12485 APTIC NO. 29674

RATES OF ENERGY TRANSFER FROM N2 A CUBED SIGMA(+) U TO VARIOUS MOLECULES. INITIAL AND FINAL QUANTUM STATES IN THE TRANSFER TO NOX SQUARED PI AND HG(6 1S SUB O), AND VIBRATIONAL RELAXATION OF N2 A CUBED SIGMA(+) U (V EQUALS 1) IN HELIUM.
12481 APTIC NO. 29750

THE ULTRA-VIOLET PHOTOLYSIS OF OZONE IN THE PRESENCE OF MOLECULAR OXYGEN.
12500 APTIC NO. 29778

PROGRESS REVIEW NO. 62: COMBUSTION OF SINGLE DROPLETS AND SIMPLIFIED SPRAY SYSTEMS.
12493 APTIC NO. 29803

KINETICS AND MECHANISMS OF THE VIBRATIONAL RELAXATION OF NOX2PI(V EQUALS 1) IN THE TEMPERATURE RANGE 100-433 K.
12474 APTIC NO. 29881

THE STUDY OF THE REACTION OF HYDROGEN SULPHIDE WITH ATOMIC OXYGEN USING EMISSION SPECTRUM.
12516 APTIC NO. 29884

ELECTRON ENERGY LOSS SPECTRA OF NO2 AND SO2.
12480 APTIC NO. 30079

PHOTOLYSIS OF THIOLANE VAPOR.
12478 APTIC NO. 30115

AIR POLLUTION OXIDANTS - THEIR EFFECTS ON METABOLIC PROCESSES IN PLANTS.
12598 APTIC NO. 29524

DEGRADATION OF POLYMERS IN REACTIVE GASES.
12617 APTIC NO. 29472

THE MECHANISM OF ATMOSPHERIC RUSTING AND THE EFFECT OF CU AND P ON THE RUST FORMATION OF LOW ALLOY STEELS.
12615 APTIC NO. 29631

COMPLEX ALKALI IRON SULFATES A CONTRIBUTION TO THE THERMODYNAMICS OF FIRESDIDE HIGH-TEMPERATURE CORROSION.
12616 APTIC NO. 29783

ATMOSPHERIC CORROSION OF SILVER.
12614 APTIC NO. 29951

REACTORS (NUCLEAR)

PRODUCTION OF GASES OF KNOWN SPECIFIC ACTIVITY IN A REACTOR FOR CALIBRATING GASEOUS EFFLUENT MONITORS.
12264 APTIC NO. 29848

SCAVENGING OF AEROSOL PARTICLES BY SPRAYS.
12437 APTIC NO. 29711

PROGRESS REPORT. JANUARY-DECEMBER 1969.
12555 APTIC NO. 28850

RECORDING METHODS

RECORDING DEVICE COMBINED WITH THERMAL PRECIPITATOR FOR MEASURING DUST CONTENT IN AIR.
12285 APTIC NO. 29540

A PHOTOGRAPHIC METHOD OF DETERMINING THE EMISSION OF DUST GENERATED BY INDUSTRIAL MACHINERY.
12254 APTIC NO. 29544

SMOKE PLUMES MONITORED DAY AND NIGHT. PRACTICAL EXPERIENCE WITH A TV-LASER PLANT IN DUISBURG.
12247 APTIC NO. 30013

CONTINUOUS CHARGED CLOUD-PARTICLE SAMPLER.
12451 APTIC NO. 29712

THE ULTRA-VIOLET PHOTOLYSIS OF OZONE IN THE PRESENCE OF WATER VAPOUR.
12435 APTIC NO. 30012

COLLECTED PHOTOGRAPHS DEMONSTRATING PLANT DAMAGE BY AIR POLLUTION.
12591 APTIC NO. 29924

REDUCTION

COMPARISON OF THE CATALYTIC ACTIVITY OF MANGANESE DIOXIDE OF ELECTROLYTIC ORIGIN AND OF MANGANESE HYDROXIDE IN THE OXIDATION OF CARBON OXIDES. IV. ADSORPTION AND DESORPTION OF THE REAGENTS AND THE PRODUCTS OF THE REACTION ON MANGANESE HYDROXIDE.
12192 APTIC NO. 29506

SMELTER POLLUTION CONTROL--FACTS AND PROBLEMS.
12076 APTIC NO. 29622

REMOVAL OF CHLORINE FROM GASES.
12177 APTIC NO. 29802

ELECTRIC DUST COLLECTION DEVICE.
12151 APTIC NO. 29819

THE EFFECT OF CATALYST POISONS ON THE ACTIVITY OF CARBON MONOXIDE SHIFT CATALYSTS.
12212 APTIC NO. 29944

CATALYTIC REDUCTION OF SULFUR DIOXIDE ON IRON-ALUMINA BIFUNCTIONAL CATALYSTS.
12152 APTIC NO. 30064

THE ANALYSIS OF MERCURY IN URINE, BLOOD, WATER, AND AIR.
12306 APTIC NO. 29652

GAS CHROMATOGRAPHIC ANALYSIS OF TRACES OF CO AND CO2.
12326 APTIC NO. 29938

NO-X CONTROL FROM STATIONARY SOURCES.
12427 APTIC NO. 29764

REDUCTION OF MAGNESIUM SULPHATE BY CARBON MONOXIDE.
12498 APTIC NO. 29943

COMPLEX ALKALI IRON SULFATES A CONTRIBUTION TO THE THERMODYNAMICS OF FIRESDIDE HIGH-TEMPERATURE CORROSION.
12616 APTIC NO. 29783

REFRACTIVE INDEX

THEORETICAL CONSIDERATION IN THE MEASUREMENT OF SMOKE PARTICLES BY OWL (II) - EFFECT OF DISPERSION.
12298 APTIC NO. 29483

A METHOD OF VERIFYING THE COEFFICIENTS A-SUB-N AND B-SUB-N OF THE MIE THEORY OF LIGHT SCATTERING BY NONABSORBING ISOTROPIC SPHERES.
12492 APTIC NO. 29488

DETERMINATION OF THE DISPERSION OF SCATTERING NEAR THE CRITICAL POINT USING THE SCATTERED LIGHT INDICATRIX.
12499 APTIC NO. 30051

REFRACTORIES

CONSIDERATIONS IN THE CONSTRUCTION OF LARGE REFUSE INCINERATORS.
12026 APTIC NO. 29547

REGIONAL GOVERNMENTS

LAW-MAKERS SAY: CLEAN UP OR SHUT DOWN.
12055 APTIC NO. 29628

ITAI-ITAI (OUCH-OUCH) DISEASE AND CADMIUM POLLUTION IN JAPAN.
12581 APTIC NO. 29673

ON THE BASIC LAW FOR ENVIRONMENTAL POLLUTION CONTROL, NOISE CONTROL LAW, WATER POLLUTION PREVENTION LAW, AND AIR POLLUTION PREVENTION LAW.
12670 APTIC NO. 29509

PRESENT SITUATION OF ADMINISTRATION CONCERNING POLLUTIONS.
12648 APTIC NO. 29598

CHIBA PREFECTURAL ORDINANCE ON POLLUTIONS CONTROL AND ENFORCEMENT REGULATION OF ORDINANCE.
12649 APTIC NO. 29679

POLLUTIONS PREVENTION PLAN FOR CHIBA AND ICHIHARA CITIES IN CHIBA PREFECTURE.
12650 APTIC NO. 29813

REGULATIONS

INVESTIGATION OF HEAVY METAL POLLUTION IN IWAKI CITY.
12007 APTIC NO. 29787

CEMENT DUST AT GREAT BRITAIN.
12001 APTIC NO. 29832

ON COMPOSITION AND LEAD CONTENT OF COMMERCIAL GASOLINE.
12048 APTIC NO. 29936

MARKET TENDENCIES FOR LEAD AND ZINC.
12003 APTIC NO. 30001

POLLUTION REGULATIONS AND THEIR EFFECT ON VEHICLE PREPARATION.
12112 APTIC NO. 29659

ENVIRONMENTAL POLLUTION CONTROL MEASURES IN WEST EUROPE AND PROBLEMS OF CARBIDE ELECTRIC FURNACE DUST IN JAPAN.
12073 APTIC NO. 29675

POLLUTION CONTROL AT THE SAGAMIHARA PLANT OF OUR TOKYO MACHINERY WORKS.
12199 APTIC NO. 29821

DUST COLLECTING SYSTEMS IN CEMENT WORKS.
12106 APTIC NO. 29831

FACTORS TO CONSIDER IN SELECTING AIR POLLUTION CONTROL EQUIPMENT.
12195 APTIC NO. 29996

THE GUIDANCE STANDARD OF THE EQUIPMENT FOR TREATING EXHAUST GASES FROM THE FACTORY (FORMALDEHYDE):APR. 1970.
12636 APTIC NO. 29756

INDUSTRIAL EMISSIONS: AN ANALYSIS OF SOME KEY FACTORS.
12669 APTIC NO. 29469

COLLECTION OF LEGISLATIONS RELATED WITH MITI CONCERNING POLLUTIONS.
12646 APTIC NO. 29504

ADDENDUM TO ENVIRONMENTAL POLLUTIONS IN KAWASAKI CITY.
12647 APTIC NO. 29511

CHIBA PREFECTURAL ORDINANCE ON POLLUTIONS CONTROL AND ENFORCEMENT REGULATION OF ORDINANCE.
12649 APTIC NO. 29679

SOME RECENT TOPICS IN AIR POLLUTION AND HEALTH IN NEW YORK.
12668 APTIC NO. 29817

MATERIALS FOR REFERENCE ABOUT ENVIRONMENTAL POLLUTION CONTROL.
12651 APTIC NO. 29818

FEDERALISM MAKES ENVIRONMENTAL PROTECTION DIFFICULT.
12654 APTIC NO. 29969

LEGAL ASPECTS OF AIR POLLUTION IN BELGIUM AND OTHER NEIGHBORING COUNTRIES.
12659 APTIC NO. 30040

LONG RANGE PLANNING IN AIR RESOURCE MANAGEMENT.
12657 APTIC NO. 30056

NOBODY BREATHES FRESH AIR. FACTS AND ARGUMENTS ABOUT AIR POLLUTION.
12677 APTIC NO. 29459

ON SOME BASIC PROBLEMS OF THE PURIFICATION OF THE AIR.
12676 APTIC NO. 29591

RENDERING

PROBLEMS OF PUBLIC NUISANCE CAUSED BY BAD ODORS IN HYOGO PREFECTURE.
12029 APTIC NO. 29599

QUALITATIVE ANALYSIS OF EXHAUST GAS FROM FISH MEAL PLANT.
12028 APTIC NO. 29662

ODOR TREATMENT AND ITS COST AT RENDERING FACTORIES.
12211 APTIC NO. 29601

PROBLEM OF OBNOXIOUS ODOR IN INDUSTRIAL POLLUTIONS.
12202 APTIC NO. 29745

RESEARCH INSTITUTES

A SUGGESTED OUTLINE FOR PROVIDING INFORMATION ON FACILITIES EXISTING IN COUNTRIES AT PILOT STATION.
12360 . APTIC NO. 29055

RESEARCH METHODOLOGIES

AIR POLLUTION TEST METHODS COMPARED IN INCINERATOR EVALUATION PROGRAM.
12119 APTIC NO. 29837

THE IRRITANT POTENTIAL OF POLLUTANTS IN THE ATMOSPHERE.
12271 APTIC NO. 29751

METHODS FOR MEASURING AND EVALUATING ODOROUS AIR POLLUTANTS AT THE SOURCE AND IN THE AMBIENT AIR.
12246 APTIC NO. 29891

STATISTICAL ANALYSES OF AIR POLLUTION SAMPLING FREQUENCY IN AN EPIDEMIOLOGIC STUDY.
12378 APTIC NO. 29655

REPLY.
12411 APTIC NO. 29470

THE CURRENT STATUS OF DEPOSITION RESEARCH.
12447 APTIC NO. 29583

INTRODUCTION AND GENERAL DESCRIPTION OF THE STUDY AND OF THE PROCEDURES FOR PROLONGED EXPOSURE TO CARBON MONOXIDE AND HYPOXIA.
12530 APTIC NO. 29503

SIGNAL PROCESSING TECHNIQUES FOR ESTIMATING PARAMETERS OF CERTAIN BIOLOGICAL MODELS.
12570 APTIC NO. 29997

CORROSION RATES OF MILD STEEL IN COASTAL, INDUSTRIAL, AND INLAND AREAS OF NORTHERN CALIFORNIA.
12620 APTIC NO. 28810

INTERSOCIETY COMMITTEE METHODS FOR AMBIENT AIR SAMPLING AND ANALYSIS. PREFACE.
12662 APTIC NO. 29491

AIR POLLUTION EPIDEMIOLOGY: A WICKED PROBLEM, AN INFORMATIONAL MAZE, AND A PROFESSIONAL RESPONSIBILITY.
12673 APTIC NO. 30138

RESEARCH PROGRAMS

VEHICLE EMISSIONS.
12027 APTIC NO. 29894

COUNTERMEASURES ON AUTOMOBILE EXHAUST GAS.
12050 APTIC NO. 29935

SMELTER POLLUTION CONTROL--FACTS AND PROBLEMS.
12076 APTIC NO. 29622

ALMOST POLLUTION-FREE POWER-PLANTS ARE SCHEDULED FOR EARLY 1975.
12092 APTIC NO. 29856

ACTIVATED CARBON INDUSTRY AND PROBLEMS IN FUTURE - SPHERICAL ACTIVATED CARBON FROM COAL.
12235 APTIC NO. 29942

METHODS FOR MEASURING AND EVALUATING ODOROUS AIR POLLUTANTS AT THE SOURCE AND IN THE AMBIENT AIR.
12246 APTIC NO. 29891

RESEARCH FACILITIES NECESSARY TO ADEQUATELY SUPPORT MEASUREMENT OF LOW LEVELS OF POLLUTANTS AND FOLLOW THEIR TRENDS.
12359 APTIC NO. 29050

THE CURRENT STATUS OF DEPOSITION RESEARCH.
12447 APTIC NO. 29583

PRIORITIES IN SCAVENGING RESEARCH.
12419 APTIC NO. 29689

ITAI-ITAI (OUCH-OUCH) DISEASE AND CADMIUM POLLUTION IN JAPAN.
12581 APTIC NO. 29673

SOME PLANS FOR FUTURE STUDIES FOR LOW LEVEL OF LEAD ON THE HUMAN BEING.
12553 APTIC NO. 29815

AIR POLLUTION BY TRACE METALS IN JAPAN.
12561 APTIC NO. 29816

A PHILOSOPHY OF INDUSTRIAL AIR POLLUTION CONTROL.
12666 APTIC NO. 29485

CHIBA PREFECTURAL ORDINANCE ON POLLUTIONS CONTROL AND ENFORCEMENT REGULATION OF ORDINANCE.
12649 APTIC NO. 29679

LEGAL ASPECTS OF AIR POLLUTION IN BELGIUM AND OTHER NEIGHBORING COUNTRIES.
12659 APTIC NO. 30040

LONG RANGE PLANNING IN AIR RESOURCE MANAGEMENT.
12657 APTIC NO. 30056

INTERNATIONAL SYMPOSIUM ON THE HYGIENE OF THE AIR OF THE MEMBER COUNTRIES OF THE COUNCIL FOR MUTUAL ECONOMIC AID.
12679 APTIC NO. 29593

RESIDENTIAL AREAS

ATMOSPHERIC POLLUTION. APPARATUS FOR MEASURING THE CONCENTRATION OF CONDENSATION NUCLEI IN THE ATMOSPHERE.
12267 APTIC NO. 30041

AIR POLLUTION.
12363 APTIC NO. 29510

STUDY OF THE SUSPENDED PARTICULATES AND LEAD CONCENTRATION IN THE AIR WITHIN THE CITY LIMITS OF MAGDEBURG.
12382 APTIC NO. 29515

TEN YEARS OF AIR POLLUTION IN HOKKAIDO.
12367 APTIC NO. 29727

THE TENDENCY OF AIR POLLUTION AT NAGOYA CITY OBSERVED FROM THE WEIGHT OF FALLING DUST.
12396 APTIC NO. 30076

EFFECTS OF ATMOSPHERIC LEAD ON TRAFFIC POLICEMEN IN A MEDIUM SIZED CITY.
12566 APTIC NO. 29958

ADDITION OF LEAD TO FUEL - HARMFUL OR DANGEROUS? (Bleizusaetze im Kraftstoff - harmlos oder gefaehrlich)? Text in German. VDI (Ver. Deut. Ingr.) Nachr. (Berlin), 25(9):6, 1971.
12527 APTIC NO. 30000

POLLUTIONS PREVENTION PLAN FOR CHIBA AND ICHIHARA CITIES IN CHIBA PREFECTURE.
12650 APTIC NO. 29813

LONG RANGE PLANNING IN AIR RESOURCE MANAGEMENT.
12657 APTIC NO. 30056

RESIDUAL OILS

TODAY'S BASE OF EUROPEAN MINERAL OIL SUPPLY.
12004 APTIC NO. 28337

THE INFLUENCE OF ENVIRONMENTAL PROTECTION ON PLANNING, OPERATION AND ECONOMY OF STEAM POWER PLANTS. I. MAINTENANCE OF CLEAN AIR.
12036 APTIC NO. 29519

COMBUSTION OF WASTE OIL FROM COAL.
12043 APTIC NO. 29534

PHYSICAL-CHEMICAL PROBLEMS OF AIR POLLUTION.
11996 APTIC NO. 29786

GULF RESIDUAL OIL HDS PROCESS.
12136 APTIC NO. 29501

PREVENTION OF AIR POLLUTION ON IRON FOUNDRY.
12178 APTIC NO. 29602

HYDROGENIZATION DESULFURIZATION METHOD OF HEAVY HC.
12189 APTIC NO. 29603

COUNTERMEASURES ON PREVENTION OF INDUSTRIAL POLLUTIONS--PART II ON SULFURIC ACID GAS.
12210 APTIC NO. 29646

ENVIRONMENTAL POLLUTION CONTROL MEASURES IN WEST EUROPE AND PROBLEMS OF CARBIDE ELECTRIC FURNACE DUST IN JAPAN.
12073 APTIC NO. 29675

ASPHALTENE HYDRODESULFURIZATION WITH SMALL CATALYST PARTICLES DISPOSED IN A GUARD CHAMBER-MAIN REACTOR SYSTEM.
12121 APTIC NO. 29719

H-OIL AS A TOOL FOR LOW SULFUR FUEL PRODUCTION.
12126 APTIC NO. 29808

MODERN OIL BURNING TECHNOLOGY AS DISPLAYED ON THE INTHERM IN STUTTGART AND THE 6.ISH IN FRANKFURT 1971.
12187 APTIC NO. 29824

EXPERIMENTAL RESEARCH ON LOW EXCESS AIR COMBUSTION IN BOILER BURNING HEAVY OIL ONLY.
12142 APTIC NO. 29860

DIRECT DESULFURIZATION OF HEAVY OIL.
12111 APTIC NO. 29908

TO PREVENT HEAVY OIL COMBUSTION GAS FROM PRODUCING BLACK SMOKE.
12213 APTIC NO. 29930

INVESTIGATION OF HEAVY OIL DESULFURIZATION IN FIXED-BED CONTACT REACTORS.
12196 APTIC NO. 29931

CONTACT HYDRODESULFURIZATION OF PETROLEUM RESIDUAL OIL.
12200 APTIC NO. 29932

HYDRODESULFURIZATION OF HEAVY QUALITY OIL, RESIDUAL OIL, ETC.. (Jushitsuyu, zansayu to no suisokadatsuryuho). Text in Japanese. (Ishikawajima-Harima Heavy Industries (Japan)) Japan. Pat. Sho 46-819. 3p., Jan. 9, 1971. (Appl. Dec. 25, 1967, claims not given).
12218 APTIC NO. 29933

STUDIES ON AIR POLLUTION CONTROL BY ADDITIVE INJECTION. PART II - PREVENTION OF CLOGGING AT HIGH TEMPERATURE HEATING SURFACE OF BOILER BY ADDING MG(OH)2 POWDER.
12075 APTIC NO. 29941

METHOD TO MANUFACTURE CATALYST FOR DESULFURIZATION BY HYDROGEN ADDITION OF LIQUID HYDROCARBON.
12234 APTIC NO. 29974

CATALYST FOR HEAVY OIL DESULFURIZATION.
12224 APTIC NO. 29977

REACTOR DEVICE FOR HEAVY OIL DESULFURIZATION.
12149 APTIC NO. 29987

STUDY ON THE DIRECT DESULFURIZATION OF HEAVY OIL.
12159 APTIC NO. 29989

CONTROL OF POLLUTANT EMISSION AND SULPHURIC ACID CORROSION FROM COMBUSTION OF RESIDUAL FUEL OIL. PART I: LOW-PRESSURE HEATING BOILERS WITH MECHANICAL ATOMIZING BURNERS.
12164 APTIC NO. 30055

DISPOSAL OF HC FROM OIL CONTAINING RESIDUAL OIL AFTER DISTILLATION USING HYDROGEN.
12162 APTIC NO. 30095

PRESENT SITUATION OF ADMINISTRATION CONCERNING POLLUTIONS.
12648 APTIC NO. 29598

POLLUTIONS PREVENTION PLAN FOR CHIBA AND ICHIHARA CITIES IN CHIBA PREFECTURE.
12650 APTIC NO. 29813

RESPIRATION

METABOLIC EFFECTS OF ATMOSPHERIC FLUORIDES ON PLANTS.
12605 APTIC NO. 29616

DAMAGE TO PLANTS BY AIR POLLUTANTS.
12603 APTIC NO. 29746

RESPIRATORY DISEASES

ABOUT THE PROBLEM OF REPRESENTATIVE SAMPLING IN THE CASE OF WET SANDBLASTING.
12033 APTIC NO. 29542

OBSERVATIONS ON THE ELIMINATION OF DUST.
12143 APTIC NO. 29554

MEASURES TAKEN BY THE REGIONAL SOCIAL SECURITY ADMINISTRATION OF LIMOGES TO REDUCE THE RISKS OF SILICOSIS.
12171 APTIC NO. 29561

ENVIRONMENTAL POLLUTION CONTROL MEASURES IN WEST EUROPE AND PROBLEMS OF CARBIDE ELECTRIC FURNACE DUST IN JAPAN.
12073 APTIC NO. 29675

AIRBORNE INFLUENZA PR8-A VIRUS INFECTIONS IN ACTIVELY IMMUNIZED MICE.
12167 APTIC NO. 29718

REPORT FOR THE INVESTIGATION ON THE METHOD OF SO2 TEST.
12301 APTIC NO. 29381

A MATHEMATICAL MODEL FOR MEASURING MASS/NUMBER INDEX OF RESPIRABLE AIRBORNE COAL DUST.
12258 APTIC NO. 30081

CIGARETTE SMOKING: OBJECTIVE EVIDENCE FOR LUNG DAMAGE IN TEEN-AGERS.
12342 APTIC NO. 30097

AIR POLLUTION.
12363 APTIC NO. 29510

EFFECTS OF ATMOSPHERIC FACTORS AND OF SO2 AND AIRBORNE DUST EMISSIONS ON INTRABRONCHIAL FLOW RESISTANCE AND INTRATHORACAL GAS VOLUME OF SOUND AND SICK MEN.
12571 APTIC NO. 29048

RAPID ASSESSMENT OF TESTS OF POLLUTANT EFFECTS IN MAN.
12536 APTIC NO. 29431

PATHOLOGICAL STUDY ON THE EXPERIMENTAL RABBITS AT AIR-POLLUTED AREA IN YOKKAICHI.
12590 APTIC NO. 29502

A CONTRIBUTION TO THE EVALUATION OF THE RISK OF SILICOSIS.
12549 APTIC NO. 29558

CHART FOR EVALUATION OF THE RISK OF SILICOSIS.
12542 APTIC NO. 29559

TWO OBSERVATIONS IN A FLUORSPAR QUARRY.
12535 APTIC NO. 29565

STUDIES OF THE SIGNIFICANCE OF DUSTS AND GASES FOR THE PATHOLOGY OF INFECTIONS OF THE RESPIRATORY TRACT.
12529 APTIC NO. 29571

STUDIES ON THE INFLUENCE OF AIR POLLUTION ON THE HEALTH OF THE PEOPLE AT BELOSLAV, DISTRICT OF VARNA, PEOPLE S REPUBLIC OF BULGARIA.
12557 APTIC NO. 29573

ON THE RELATIONSHIP BETWEEN AIR POLLUTION AND MORBIDITY AND MORTALITY OF THE POPULATION IN POLISH TOWNS.
12563 APTIC NO. 29575

THE RESEARCH FOR THE EFFECTS OF AIR POLLUTION ON THE HUMAN BODY. (II) THE RELATIONSHIP BETWEEN ASTHMA-LIKE DISEASES OF THE SCHOOL CHILDREN AND AIR POLLUTION IN KITAKYUSHU.
12524 APTIC NO. 29683

PULMONARY CHANGES IN 7000 MICE FOLLOWING PROLONGED EXPOSURE TO AMBIENT AND FILTERED LOS ANGELES AIR.
12551 APTIC NO. 29763

PATIENT ADVICE DURING ACUTE AIR POLLUTION EPISODE.
12531 APTIC NO. 29878

SOME RECENT TOPICS IN AIR POLLUTION AND HEALTH IN LONDON.
12562 APTIC NO. 29882

STUDY ON THE EFFECTS OF AIR POLLUTION ON HUMAN BODY--WITH SPECIAL REFERENCE TO OBJECTIVE, COMPARATIVE STUDY OF ALL THE INHABITANTS BY CHEST X-RAY RINDINGS.
12554 APTIC NO. 29904

STUDIES ON PROGNOSIS OF CHRONIC BRONCHITIS.
12587 APTIC NO. 29916

STUDIES ON AIR POLLUTION AND BRONCHIAL ASTHMA. REPORT 1.
12548 APTIC NO. 29925

ATMOSPHERIC POLLUTIONS AND HEALTH.
12537 APTIC NO. 29971

THE ROLE OF TRACE METALS IN CHEMICAL CARCINOGENESIS: ASBESTOS CANCERS.
12543 APTIC NO. 29993

SOME HEALTH SURVEY RESULTS OF UNDERGROUND GARAGE WORKERS.
12568 APTIC NO. 30074

CHANGES IN AIRWAYS CONDUCTANCE ON SMOKING A CIGARETTE.
12540 APTIC NO. 30135

THE ROLE OF AIR POLLUTION ON CHRONIC OBSTRUCTIVE PULMONARY DISEASE.
12539 APTIC NO. 30136

CAN ANYTHING BE DONE FOR EMPHYSEMA? J. Louisiana State Med. Soc., 122(7):216-218, July 1970. 18 refs.
12579 APTIC NO. 30137

PULMONARY COMPLICATIONS OF ASBESTOS EXPOSURE.
12552 APTIC NO. 29221

PATHOLOGICAL STUDY ON THE EXPERIMENTAL RABBITS AT AIR-POLLUTED AREA IN YOKKAICHI.
12590 APTIC NO. 29502

STUDIES ON THE INFLUENCE OF AIR POLLUTION ON THE HEALTH OF THE PEOPLE AT BELOSLAV, DISTRICT OF VARNA, PEOPLE S REPUBLIC OF BULGARIA.
12557 APTIC NO. 29573

ON THE PROBLEM OF THE COMBINED EFFECTS OF SULFUR DIOXIDE AND BENZPYRENE ON THE ORGANISMS OF TEST ANIMALS.
12583 APTIC NO. 29585

EFFECTS OF LOW CARBON MONOXIDE CONCENTRATIONS IN MAN.
12533 APTIC NO. 29609

LEAD MEN HEADING TOWARD DESTRUCTION--SPREADING OMINOUS METAL POLLUTIONS.
12569 APTIC NO. 29789

MATERIALS FOR REFERENCE ABOUT ENVIRONMENTAL POLLUTION CONTROL.
12651 APTIC NO. 29818

RETENTION

LEAD POLLUTION--A GROWING HAZARD TO PUBLIC HEALTH.
11999 APTIC NO. 29872

REPORT ON THE INVESTIGATION INTO THE MAINTENANCE AND THE SUPERVISION OF AIR-CLEANING APPARATUS AS AN INDICATION OF AIR POLLUTION.
12122 APTIC NO. 29840

GENERATION AND MEASUREMNT OF AIR IONS FOR MEDICAL APPLICATIONS AND THER INFLUENCE ON REACTION TIME AND MONOSYNAPTIC REFLEX OF MAN.
12547 APTIC NO. 29267

LEAD IN THE ENVIRONMENT.
12564 APTIC NO. 29493

LEAD MEN HEADING TOWARD DESTRUCTION--SPREADING OMINOUS METAL POLLUTIONS.
12569 APTIC NO. 29789

ADDITION OF LEAD TO FUEL - HARMFUL OR DANGEROUS? (Bleizusaetze im Kraftstoff - harmlos oder gefaehrlich)? Text in German. VDI (Ver. Deut. Ingr.) Nachr. (Berlin), 25(9):6, 1971.
12527 APTIC NO. 30000

THE PREVENTION OF POLLUTION. PART II-POLLUTION AND THE LAW.
12658 APTIC NO. 29474

NOBODY BREATHES FRESH AIR. FACTS AND ARGUMENTS ABOUT AIR POLLUTION.
12677 APTIC NO. 29459

RIVERS

A MEASUREMENT GRID FOR AIR POLLUTION IN THE MOUTH OF THE RIVER RHINE IN ROTTERDAM.
12333 APTIC NO. 29460

ITAI-ITAI (OUCH-OUCH) DISEASE AND CADMIUM POLLUTION IN JAPAN.
12581 APTIC NO. 29673

CONTINUOUS MEASUREMENT SYSTEM OF ATMOSPHERIC POLLUTION AT THE MOUTH OF THE RHINE, NEAR ROTTERDAM.
12645 APTIC NO. 28696

ON THE BASIC LAW FOR ENVIRONMENTAL POLLUTION CONTROL, NOISE CONTROL LAW, WATER POLLUTION PREVENTION LAW, AND AIR POLLUTION PREVENTION LAW.
12670 APTIC NO. 29509

ROTARY PISTON ENGINES

INTERNAL COMBUSTION ENGINE EXHAUST SYSTEM.
12132 APTIC NO. 29836

RUBBER

A NEW ENVIRONMENTAL POLLUTANT - POLYCHLORINATED BIPHENYLS (PCB).
12044 APTIC NO. 29984

COMBUSTION PLANT FOR RUBBER-COATED EQUIPMENT, TANKS AND CABLES.
12191 APTIC NO. 29834

SIMPLIFIED TECHNIQUES IN AIR POLLUTION MEASUREMENT.
12289 APTIC NO. 29771

ATMOSPHERIC REACTIONS AND SCAVENGING PROCESSES.
12426 APTIC NO. 29774

S

SAFETY EQUIPMENT

ON A DUST-COLLECTING DEVICE FOR A FERROSILICON FURNACE.
12219 APTIC NO. 30086

SCAVENGING OF AEROSOL PARTICLES BY SPRAYS.
12437 APTIC NO. 29711

SALTZMAN METHOD

QUANTITATIVE ANALYSIS OF NO IN ATMOSPHERE - ON CHANGES IN SALTZMAN COEFFICIENT WITH CHANGE IN COMPOSITION OF SALTZMAN REAGENTS.
12308 APTIC NO. 29480

OXIDATION OF NITROGEN MONOXIDE.
12320 APTIC NO. 29676

JIS ANALYTICAL PROCESS FOR NITROGEN OXIDES IN WASTE GAS.
12355 APTIC NO. 29677

PROGRESS IN MEASUREMENT OF AIR POLLUTION.
12350 APTIC NO. 29748

DETERMINATION AND EVALUATION OF LOW CONCENTRATIONS OF INDUSTRIAL AIR POLLUTANTS.
12309 APTIC NO. 30014

STUDIES ON PHOTOLYSIS OF NITORGEN OXIDE.
12513 APTIC NO. 29527

SAMPLERS

ABOUT THE PROBLEM OF REPRESENTATIVE SAMPLING IN THE CASE OF WET SANDBLASTING.
12033 APTIC NO. 29542

DETERMINATION OF LEAD CONTENTS IN AUTOMOBILE EXHAUST GAS.
12013 APTIC NO. 29661

ATMOSPHERIC POLLUTION IN HEADINGS FOLLOWING SHOTFIRING.
12024 APTIC NO. 29678

CONTROL OF OIL-FIRED HEATERS, A MODERN COMMUNAL TASK.
12015 APTIC NO. 30100

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

EFFICIENCY OF FILTERS FOR RADIOACTIVE AEROSOL.
12155 APTIC NO. 29768

METHOD TO ARREST AND REMOVE WHITE SMOKE PRODUCED FROM MOLTEN ZINC PLATING PROCESS.
12135 APTIC NO. 29940

REVIEW OF CASCADE IMPACTORS FOR PARTICLE SIZE ANALYSIS AND A NEW CALIBRATION FOR THE CASELLA CASCADE IMPACTOR.
12311 APTIC NO. 29270

METAL COMPONENTS OF FLOATING DUST.
12286 APTIC NO. 29464

APPARATUS FOR TEST PREPARATION IN VERY HUMID ATMOSPHERES AND IN PARTICULAR AT DRILLING OPERATIONS.
12253 APTIC NO. 29541

THE IMPORTANCE OF AGGREGATION PHENOMENA IN THE QUANTITATIVE ESTIMATE OF DUST IN THE AIR.
12354 APTIC NO. 29549

OBSERVATIONS CONCERNING THE USE OF THE A.R.M. APPARATUS AND THE POSSIBILITIES OF UTILIZING THE RESULTS FOR PREVENTIVE MEASURES.
12291 APTIC NO. 29556

GENERAL REMARKS ABOUT DUST SAMPLING.
12321 APTIC NO. 29564

AN ASPIRATION INSTALLATION OF HIGH EFFICIENCY FOR COLLECTING SAMPLES OF RADIOACTIVE AEROSOLS FROM THE ATMOSPHERE.
12318 APTIC NO. 29670

PROGRESS IN MEASUREMENT OF AIR POLLUTION.
12350 APTIC NO. 29748

DETERMINATION OF THE SOOT INDEX IN WASTE GASES OF OIL BURNERS.
12257 APTIC NO. 29749

SIMPLIFIED TECHNIQUES IN AIR POLLUTION MEASUREMENT.
12289 APTIC NO. 29771

POROUS ANALYTICAL FILTERS AND THEIR USE IN AIR HYGIENE.
12346 APTIC NO. 29784

FLUOROMETRIC DETERMINATION OF BROMINE: APPLICATION TO MEASUREMENT OF BROMINE AEROSOLS.
12255 APTIC NO. 29811

MEASUREMENT OF ATMOSPHERIC DUST BY LIGHT SCATTERING METHOD AND HIGH VOLUME SAMPLER METHOD.
12357 APTIC NO. 29864

A SHORT TERM DETERMINATION OF BENZO(A)PYRENE AND BENZO(K) FLUORANTHENE IN AIR POLLUTANTS.
12319 APTIC NO. 29965

STUDIES IN INDOOR SWIMMING POOLS WITH OZONIZATION PLANTS.
12353 APTIC NO. 29999

FILTER METHOD FOR THE MEASUREMENT OF ATMOSPHERIC HYDROGEN SULFIDE.
12330 APTIC NO. 30004

DETERMINATION OF POLYNUCLEAR AROMATICS IN SUSPENDED PARTICLES.
12393 APTIC NO. 29462

INTERPRETATION OF RESULTS OF EXAMINATION OF AIR.
12386 APTIC NO. 29545

BENZPYRENE AND OTHER AROMATIC HYDROCARBONS IN THE DUST OF POLISH TOWNS.
12385 APTIC NO. 29569

STATISTICAL ANALYSES OF AIR POLLUTION SAMPLING FREQUENCY IN AN EPIDEMIOLOGIC STUDY.
12378 APTIC NO. 29655

A REPORT OF THE PERIODIC MEASUREMENT OF SOOT AND DUST, AND SULFUR OXIDES IN THE AII AROUND THE HOSPITAL.
12381 APTIC NO. 29794

SUSPENDED PARTICULATES IN OSAKA CITY.
12375 APTIC NO. 29853

SEASONAL VARIATION OF THE CONCENTRATION OF HEAVY METALS IN SUSPENDED DUST ON THE MAIN STREETS.
12384 APTIC NO. 30025

THE TENDENCY OF AIR POLLUTION AT NAGOYA CITY OBSERVED FROM THE WEIGHT OF FALLING DUST.
12396 APTIC NO. 30076

SCAVENGING OF AEROSOL PARTICLES BY SPRAYS.
12437 APTIC NO. 29711

CONTINUOUS CHARGED CLOUD-PARTICLE SAMPLER.
12451 APTIC NO. 29712

AUTOMATIC SEQUENTIAL RAIN SAMPLER FOR SCAVENGING STUDIES.
12423 APTIC NO. 29741

EFFECTS OF ATMOSPHERIC LEAD ON TRAFFIC POLICEMEN IN A MEDIUM SIZED CITY.
12566 APTIC NO. 29958

THE PRESENT RESULTS OF DETERMINATIONS OF 3,4-BENZPYRENE IN THE AIR OVER BUDAPEST.
12631 APTIC NO. 29590

ATMOSPHERIC POLLUTANTS FRENCH LEGISLATION. STANDARD MEASURING METHODS. RECENT COMMERCIAL APPARATUS.
12638 APTIC NO. 29003

SAMPLING PROBES

NOBODY BREATHES FRESH AIR. FACTS AND ARGUMENTS ABOUT AIR POLLUTION.
12677 APTIC NO. 29459

SAN FRANCISCO

DEVELOPMENT OF A METEOROLOGICALLY CONTROLLED AGRICULTURAL BURNING PROGRAM.
12058 APTIC NO. 29724

SCATTERING (ATMOSPHERIC)

RADIANCE AND POLARIZATION OF LIGHT REFLECTED FROM OPTICALLY THICK CLOUDS.
12429 APTIC NO. 29915

SOME RESULTS OF LIDAR PROBING OF THE TROPOSHERE.
12434 APTIC NO. 30105

THE SCATTERING OF THERMAL ELECTRONS BY CARBON MONOXIDE.
12484 APTIC NO. 29654

SCREEN FILTERS

THE PROBLEM OF INDUSTRIAL DUST: WAYS TO REGULATE ITS COLLECTION.
12099 APTIC NO. 29990

VALUE ANALYSIS OF COAL.
12629 APTIC NO. 30122

SCRUBBERS

CONSIDERATIONS IN THE CONSTRUCTION OF LARGE REFUSE INCINERATORS.
12026 APTIC NO. 29547

PROBLEMS OF PUBLIC NUISANCE CAUSED BY BAD ODORS IN HYOGO PREFECTURE.
12029 APTIC NO. 29599

AMMONIA DISPOSAL--COKE PLANTS.
12012 APTIC NO. 29627

DESIGN OF NEW SILVER-RECOVERY INCINERATOR.
12008 APTIC NO. 29635

INCINERATOR DESIGNED TO ANTICIPATE PROBLEMS.
11994 APTIC NO. 29669

ATMOSPHERIC POLLUTION IN HEADINGS FOLLOWING SHOTFIRING.
12024 APTIC NO. 29678

TREATMENT OF MUNICIPAL TRASH BY SANITATION TRUCK.
12049 APTIC NO. 29979

MODERN DUST CONTROL.
12217 APTIC NO. 29486

POLLUTION CONTROL SYSTEMS FOR ASPHALT PLANTS.
12233 APTIC NO. 29492

HEAT EXTRACTION AIDS DEPOLLUTION OF GASES AND WATER IN CHEVROLET FOUNDRY.
12097 APTIC NO. 29523

MITSUBISHI-RESEARCH DISC SCRUBBER.
12080 APTIC NO. 29536

MITSUBISHI-RESEARCH WEDGE SCRUBBER.
12081 APTIC NO. 29537

STUDY OF DUSTINESS AND PURIFICATION OF AIR IN A QUARRY.
12128 APTIC NO. 29562

MODERN SULFURIC ACID TECHNOLOGY.
12093 APTIC NO. 29607

POLLUTION TECHNOLOGY--WHAT THEY RE DOING OVERSEAS.
12244 APTIC NO. 29650

ENVIRONMENTAL POLLUTION CONTROL MEASURES IN WEST EUROPE AND PROBLEMS OF CARBIDE ELECTRIC FURNACE DUST IN JAPAN.
12073 APTIC NO. 29675

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

DEVICE TO HOLD IN PLACE ATOMIZER NOZZLES OF A WASHER DEVICE FOR SULFUR OXIDE GAS CONTAINED IN COMBUSTION EXHAUST GAS FROM BOILER.
12138 APTIC NO. 29685

TECHNOLOGY RENDERS ITS SERVICES TO AIR PURIFICATION AND NOISE SUPPRESSION AS PART OF ENVIRONMENTAL HYGIENE.
12227 APTIC NO. 29725

DEVELOPMENT OF GAS PURIFICATION INSTALLATIONS FOR ELECTRIC MELTING FURNACES.
12204 APTIC NO. 29740

PROBLEM OF OBNOXIOUS ODOR IN INDUSTRIAL POLLUTIONS.
12202 APTIC NO. 29745

SEPARATION OF CO2 AND H2S FROM GAS MIXTURES.
12086 APTIC NO. 29752

PURIX WET COLLECTOR FOR WASTE GAS CLEANING.
12060 APTIC NO. 29767

ALKALI AND HEAT RECOVERY IN THE FLUE GASES FROM RECOVERY BOILERS.
12193 APTIC NO. 29852

THE NEW DUPLEX IRON MELTING PLANT AT THE M. BUSCH KG IN WEHRSTAPEL.
12094 APTIC NO. 29861

RESISTANCE OF PHASES INVOLVED IN MASS TRANSFER DURING ABSORPTION OF A READILY SOLUBLE GAS IN A VENTURI SCRUBBER.
12188 APTIC NO. 29968

THE PROBLEM OF INDUSTRIAL DUST: WAYS TO REGULATE ITS COLLECTION.
12099 APTIC NO. 29990

FACTORS TO CONSIDER IN SELECTING AIR POLLUTION CONTROL EQUIPMENT.
12195 APTIC NO. 29996

ELIMINATION OF OXIDES CONTAINED IN CERTAIN RESIDUAL INDUSTRIAL GASES.
12129 APTIC NO. 30043

PROCESS FOR REMOVING SULPHUR FROM GASES.
12139 APTIC NO. 30049

PULPERS APPLY ODOR CONTROL.
12104 APTIC NO. 30062

SULFURIC ACID, SO2 DEVELOPMENTS: REMOVING SO2 AND ACID MIST WITH VENTURI SCRUBBERS.
12209 APTIC NO. 30080

THE SCRUBBING OF TAIL GAS FROM SULFURIC ACID PLANTS.
12067 APTIC NO. 30096

REDUCING SO2 EMISSION FROM STATIONARY SOURCES.
12098 APTIC NO. 30102

AIR POLLUTION DERIVING FROM HEATING PLANTS AND INDUSTRIAL PROCESSES AND ITS CONTROL.
12229 APTIC NO. 30106

LEAD SMELTING PLANT CONTROLS AIR EMISSIONS.
12069 APTIC NO. 30124

A STUDY OF AIR POLLUTION AROUND A SULPHURIC ACID PLANT.
12374 APTIC NO. 29883

HOW EMISSION CONTROL AFFECTS MELTING COSTS.
12628 APTIC NO. 29879

THE COSTS FOR MAINTENANCE OF CLEAN AIR. THE INFLUENCE OF SOCIAL COSTS ON THE SELECTION OF AN INDUSTRIAL SITE.
12633 APTIC NO. 29923

INDUSTRIAL REACTION TO SULPHUR DIOXIDE CONTROL EQUIPMENT AND STANDARDS.
12637 APTIC NO. 29604

THE GUIDANCE STANDARD OF THE EQUIPMENT FOR TREATING EXHAUST GASES FROM THE FACTORY (FORMALDEHYDE):APR. 1970.
12636 APTIC NO. 29756

POLLUTIONS PREVENTION PLAN FOR CHIBA AND ICHIHARA CITIES IN CHIBA PREFECTURE.
12650 APTIC NO. 29813

SECONDARY AIR

EMISSION CONTROL BY EXHAUST MANIFOLD REACTOR--AN INITIAL STUDY FOR SMALL ENGINES.
12163 APTIC NO. 29629

EXHAUST SYSTEM.
12165 APTIC NO. 29723

SEDIMENTATION

HEAVY METAL POLLUTION IN THE ONAHAMA INDUSTRIAL AREA. 1ST REPORT. DISTRIBUTION OF HEAVY METALS IN SOIL.
12006 APTIC NO. 29539

PARTICLE CAPTURE MECHANISMS IN FIBROUS FILTERS.
12214 APTIC NO. 29324

TECHNOLOGY RENDERS ITS SERVICES TO AIR PURIFICATION AND NOISE SUPPRESSION AS PART OF ENVIRONMENTAL HYGIENE.
12227 APTIC NO. 29725

FILTRATION OF MULTI-DISPERSING AEROSOL UNDER THE FORCE OF GRAVITY.
12115 APTIC NO. 29730

MANUFACTURING OF INDUSTRIAL CATALYST COMPRISING ALUMINA AS CARRIER. (Arumina o tantai to shita kogyo shokubai no seizo). Text in Japanese. Preprint, Japan Industrial Technology Assoc., Tokyo, 12p., 1970. 5 refs. (Presented at the Industrial Catalyst Seminar Tokyo, Japan, Nov. 9, 1970.)
12158 APTIC NO. 29755

THE PROBLEM OF INDUSTRIAL DUST: WAYS TO REGULATE ITS COLLECTION.
12099 APTIC NO. 29990

RECORDING DEVICE COMBINED WITH THERMAL PRECIPITATOR FOR MEASURING DUST CONTENT IN AIR.
12285 APTIC NO. 29540

A CONVENIENT METHOD FOR APPLYING A SUPPORTING FILM TO GRIDS USED ON WALKENHORST THERMAL PRECIPITATOR PLUGS.
12250 APTIC NO. 30116

COLLECTION EFFICIENCY OF WATER DROPLETS IN AGCL AEROSOL.
12430 APTIC NO. 29687

COAGULATION OF DUST PARTICLES, IN PARTICULAR BY AEROSOLS OF SEA WATER SALT.
ERROR

APPROXIMATE SOLUTION OF THE EQUATIONS FOR AEROSOL AGGLOMERATION.
12483 APTIC NO. 30111

SELENIUM COMPOUNDS

COLLECTION OF LEGISLATIONS RELATED WITH MITI CONCERNING POLLUTIONS.
12646 APTIC NO. 29504

SETTLING CHAMBERS

GRAVITATIONAL AND DRY CENTRIFUGAL COLLECTORS AND AIR POLLUTION CONTROL.
12095 APTIC NO. 30123

SEWAGE

PROBLEMS OF PUBLIC NUISANCE CAUSED BY BAD ODORS IN HYOGO PREFECTURE.
12029 APTIC NO. 29599

POLLUTION TECHNOLOGY--WHAT THEY RE DOING OVERSEAS.
12244 APTIC NO. 29650

DEVELOPMENT OF GAS PURIFICATION INSTALLATIONS FOR ELECTRIC MELTING FURNACES.
12204 APTIC NO. 29740

LOSS OF MERCURY FROM CHLORALKALI PLANTS.
12120 APTIC NO. 30117

THE PREVENTION OF POLLUTION. PART II-POLLUTION AND THE LAW.
12658 APTIC NO. 29474

SEWAGE TREATMENT

PROBLEMS OF PUBLIC NUISANCE CAUSED BY BAD ODORS IN HYOGO PREFECTURE.
12029 APTIC NO. 29599

SIEVE ANALYSIS
EXPERIMENTAL INVESTIGATION OF THE PROCESS OF CENTRIFUGAL DUST SEPARATION.
12245 APTIC NO. 30133

SILICON COMPOUNDS
DUST COLLECTOR FOR ELECTRIC FURNACE MANUFACTURING FERROALLOY.
12123 APTIC NO. 29481
MEASURES TAKEN BY THE REGIONAL SOCIAL SECURITY ADMINISTRATION OF LIMOGES TO REDUCE THE RISKS OF SILICOSIS.
12171 APTIC NO. 29561
ON A DUST-COLLECTING DEVICE FOR A FERROSILICON FURNACE.
12219 APTIC NO. 30086
DISPOSAL OF HC FROM OIL CONTAINING RESIDUAL OIL AFTER DISTILLATION USING HYDROGEN.
12162 APTIC NO. 30095
TWO OBSERVATIONS IN A FLUORSPAR QUARRY.
12535 APTIC NO. 29565
STUDIES OF THE SIGNIFICANCE OF DUSTS AND GASES FOR THE PATHOLOGY OF INFECTIONS OF THE RESPIRATORY TRACT.
12529 APTIC NO. 29571
STUDIES ON THE INFLUENCE OF AIR POLLUTION ON THE HEALTH OF THE PEOPLE AT BELOSLAV, DISTRICT OF VARNA, PEOPLE S REPUBLIC OF BULGARIA.
12557 APTIC NO. 29573
EFFECT OF LOW SILICIUM CONTENT AND SOME SURFACE TREATMENT ON THE OXIDATION OF CARBON STEELS IN CARBON DIOXIDE ATMOSPHERES AT MEDIUM TEMPERATURES.
12611 APTIC NO. 29995
COMPARATIVE STUDY OF PERMISSIBLE LIMITS OF AIR DUSTINESS IN VARIOUS COUNTRIES.
12639 APTIC NO. 29543
COLLECTION OF LEGISLATIONS RELATED WITH MITI CONCERNING POLLUTIONS.
12646 APTIC NO. 29504

SILICON DIOXIDE
ON A DUST-COLLECTING DEVICE FOR A FERROSILICON FURNACE.
12219 APTIC NO. 30086
PARTICLE SIZE MEASURING WITH THE TELEVISION MICROSCOPE QUANTIMET FOR SIZES MINUS 4 MICRONS.
12304 APTIC NO. 29512

SILICOSIS
ABOUT THE PROBLEM OF REPRESENTATIVE SAMPLING IN THE CASE OF WET SANDBLASTING.
12033 APTIC NO. 29542
OBSERVATIONS ON THE ELIMINATION OF DUST.
12143 APTIC NO. 29554
MEASURES TAKEN BY THE REGIONAL SOCIAL SECURITY ADMINISTRATION OF LIMOGES TO REDUCE THE RISKS OF SILICOSIS.
12171 APTIC NO. 29561
A CONTRIBUTION TO THE EVALUATION OF THE RISK OF SILICOSIS.
12549 APTIC NO. 29558
CHART FOR EVALUATION OF THE RISK OF SILICOSIS.
12542 APTIC NO. 29559
TWO OBSERVATIONS IN A FLUORSPAR QUARRY.
12535 APTIC NO. 29565

SILVER COMPOUNDS
DESIGN OF NEW SILVER-RECOVERY INCINERATOR.
12008 APTIC NO. 29635
JIS ANALYTICAL PROCESS FOR NITROGEN OXIDES IN WASTE GAS.
12355 APTIC NO. 29677
COLLECTION EFFICIENCY OF WATER DROPLETS IN AGCL AEROSOL.
12430 APTIC NO. 29687
CONCENTRATION VARIATION OF SOME TRACE METALS IN PRECIPITATION FROM GREAT PLAINS THUNDERSTORMS.
12457 APTIC NO. 29706
TRACE ELEMENTS IN ATMOSPHERIC PRECIPITATION AROUND THE OTKAZNOE RESERVOIR.
12432 APTIC NO. 29910

SIMULATION
A NATIONAL ESTIMATE OF PUBLIC AND INDUSTRIAL HEAT REJECTION REQUIREMENTS BY DECADES THROUGH THE YEAR 2000 AD.
12018 APTIC NO. 29272
DESIGN OF AN ELECTROSTATIC PRECIPITATOR USING MODELLING AND SIMULATION TECHNIQUES.
12223 APTIC NO. 29639
PLANTS AND POLLUTED AIR.
12230 APTIC NO. 30083
EXPERIMENTAL INVESTIGATION OF THE PROCESS OF CENTRIFUGAL DUST SEPARATION.
12245 APTIC NO. 30133
A FINDING CONCERNING A BASIC INVESTIGATION METHOD ON ODOR POLLUTION SEEN FROM ACTUAL EXPERIENCE. REPORT NO. 2 ON THE STUDIES OF OBNOXIOUS ODOR.
12294 APTIC NO. 29508
GASEOUS PLUME DIFFUSION ABOUT ISOLATED STRUCTURES OF SIMPLE GEOMETRY. (ANNUAL PROGRESS REPORT).
12438 APTIC NO. 29584
COLLECTION EFFICIENCIES OF RAINDROPS FOR SUBMICRON PARTICULATES.
12404 APTIC NO. 29709
ATMOSPHERIC REACTIONS AND SCAVENGING PROCESSES.
12426 APTIC NO. 29774
AIR POLLUTION CONTROL SYSTEM (3).
12401 APTIC NO. 29795
A NUMERICAL EXPERIMENT IN SIMULATING THE TRANSPORT OF SULFUR DIOXIDE THROUGH THE ATMOSPHERE.
12446 APTIC NO. 29952
EXPERIMENTS WITH A REGIONAL FINE-MESH PREDICTION MODEL.
12465 APTIC NO. 30107
OXYGEN AFFINITY AND ACID-BASE STATUS OF HUMAN BLOOD DURING EXPOSURE TO HYPOXIA AND CARBON MONOXIDE.
12567 APTIC NO. 29528

SINGLE CHAMBER INCINERATO
AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680
STUDY ON MECHANISM OF REACTION WITH SULFUR DIOXIDE OF LIMESTONE POWDER BLOWN INTO COMBUSTION GAS.
12146 APTIC NO. 29479
PREVENTION OF AIR POLLUTION ON IRON FOUNDRY.
12178 APTIC NO. 29602
AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680
ON HYGIENIC AND TOXICOLOGICAL PROBLEMS OF POLLUTION BY ARSENIC.
12534 APTIC NO. 29587

SLAUGHTERHOUSES
PROBLEM OF OBNOXIOUS ODOR IN INDUSTRIAL POLLUTIONS.
12202 APTIC NO. 29745

SLUDGE
POLLUTION TECHNOLOGY--WHAT THEY RE DOING OVERSEAS.
12244 APTIC NO. 29650
DEVELOPMENT OF GAS PURIFICATION INSTALLATIONS FOR ELECTRIC MELTING FURNACES.
12204 APTIC NO. 29740

SMOG
PHYSICAL-CHEMICAL PROBLEMS OF AIR POLLUTION.
11996 APTIC NO. 29786
TAKING ANOTHER LOOK BEFORE WE TAKE THE LEAD OUT.
11997 APTIC NO. 30067
STUDY ON AUTO EXHAUST.
12241 APTIC NO. 29909
JOINT DEMONSTRATION OF METHODS FOR EXTINGUISHMENT AND CONTROL OF BURNING COAL REFUSE PILES. (FINAL REPORT).
12066 APTIC NO. 30057
LEAD POLLUTION AND PHOTOCHEMICAL SMOG IN TOKYO.
12376 APTIC NO. 29647
EXPERIMENT ON PHOTOCHEMICAL REACTION OF MOTOR EXHAUST GAS.
12469 APTIC NO. 29500
PHOTOCHEMICAL SMOG.
12418 APTIC NO. 29672
EPISODE 104.
12410 APTIC NO. 29695
ATMOSPHERIC REACTIONS AND SCAVENGING PROCESSES.
12426 APTIC NO. 29774
PHOTOCHEMICAL SMOG AND ITS REACTION MECHANISM.
12459 APTIC NO. 29934
SOME RECENT TOPICS IN AIR POLLUTION AND HEALTH IN LONDON.
12562 APTIC NO. 29882
UNLEADED GASOLINE AND SMOG-FREE AUTOS--HOW AND WHY.
12644 APTIC NO. 30035
IT BEGAN WITH THE SMOG IN CALIFORNIA. CALIFORNIA TEST, EU-

ROPEAN TEST--INTERNATIONAL REGULATIONS OF AUTOMOBILE EXHAUST GAS EMISSIONS.
12640 APTIC NO. 30069

TOKYO FIGHTS POLLUTION. AN URGENT APPEAL FOR REFORM.
12653 APTIC NO. 29888

COMPARATIVE STUDY OF CERTAIN PROVISIONS IN MEMBER STATES FOR CONTROLLING AIR POLLUTION.
12656 APTIC NO. 30052

AIR POLLUTION--THE STATUS TODAY.
12681 APTIC NO. 28923

SMOKE SHADE

POLLUTION CONTROL AT THE SAGAMIHARA PLANT OF OUR TOKYO MACHINERY WORKS.
12199 APTIC NO. 29821

LOW POWER HOUSEHOLD OIL BURNING INSTALLATIONS. HOW THEY FUNCTION, PROPOSAL FOR A METHOD OF REGULATING THEM.
12079 APTIC NO. 30108

THE PREVENTION OF POLLUTION. PART II-POLLUTION AND THE LAW.
12658 APTIC NO. 29474

NOBODY BREATHES FRESH AIR. FACTS AND ARGUMENTS ABOUT AIR POLLUTION.
12677 APTIC NO. 29459

SMOKEMETERS

DEVELOPMENT OF A NEW DUST COLLECTOR.
12056 APTIC NO. 29686

LOW POWER HOUSEHOLD OIL BURNING INSTALLATIONS. HOW THEY FUNCTION, PROPOSAL FOR A METHOD OF REGULATING THEM.
12079 APTIC NO. 30108

A NEW METHOD OF MEASURING THE OPACITY OF COMBUSTION FUMES.
12249 APTIC NO. 29068

EMISSION MONITORING WITH ACKNOWLEDGED MEASURING UNITS AND ANALYZERS.
12260 APTIC NO. 29955

ON AIR POLLUTION IN MIZUSHIMA AREA.
12390 APTIC NO. 29895

NOBODY BREATHES FRESH AIR. FACTS AND ARGUMENTS ABOUT AIR POLLUTION.
12677 APTIC NO. 29459

SMOKES

EMISSION OF AIR POLLUTANTS FROM AIRCRAFT JET ENGINES.
12035 APTIC NO. 29734

INVESTIGATION OF HEAVY METAL POLLUTION IN IWAKI CITY.
12007 APTIC NO. 29787

EXPERIMENTAL STUDY ON PLASTICS INCINERATION.
12017 APTIC NO. 29841

BASIC RESEARCH ON SMOKE DESULFURIZATION BY LIME-METALS, 2ND REPORT - EFFECT OF METAL ADDITION ON CALCINATION OF LIME.
12153 APTIC NO. 29080

BASIC RESEARCH ON SMOKE DESULFURIZATION BY LIME-METALS, 1ST REPORT - DESULFURIZATION EFFECT BY ADDITION OF METAL.
12154 APTIC NO. 29478

DUST COLLECTOR FOR ELECTRIC FURNACE MANUFACTURING FERROALLOY.
12123 APTIC NO. 29481

EXHAUST GAS CLEANER FOR DIESEL ENGINES.
12221 APTIC NO. 29533

OUTLOOK OF ENVIRONMENTAL POLLUTION AND ITS PREVENTION TECHNOLOGY.
12124 APTIC NO. 29600

PREVENTION OF AIR POLLUTION ON IRON FOUNDRY.
12178 APTIC NO. 29602

PULSED EMISSION CHIMNEY.
12082 APTIC NO. 29626

ENVIRONMENTAL POLLUTION CONTROL MEASURES IN WEST EUROPE AND PROBLEMS OF CARBIDE ELECTRIC FURNACE DUST IN JAPAN.
12073 APTIC NO. 29675

DEVELOPMENT OF A NEW DUST COLLECTOR.
12056 APTIC NO. 29686

EFFECTS OF THE ADDITION OF BARIUM COMPOUND ON THE SMOKE CONCENTRATION OF DIESEL EXHAUST GAS.
12057 APTIC NO. 29696

ON PUBLIC NUISANCE BY, AND ENVIRONMENTAL HYGIENE OF, PAINT MANUFACTURING INDUSTRY.
12059 APTIC NO. 29761

BAGHOUSE OPERATION AT THE WHITING, INDIANA PLANT OF THE FEDERATED METALS DIVISION AMERICAN SMELTING AND REFINING COMPANY.
12107 APTIC NO. 29772

STEAM-SMOKE MIST CONTACT DEVICE.
12174 APTIC NO. 29792

POLLUTION CONTROL AT THE SAGAMIHARA PLANT OF OUR TOKYO MACHINERY WORKS.
12199 APTIC NO. 29821

COMBUSTION PLANT FOR RUBBER-COATED EQUIPMENT, TANKS AND CABLES.
12191 APTIC NO. 29834

EFFECTS OF WATER INJECTION IN INLET TUBE ON NO CONCENTRATION IN DIESEL EXHAUST.
12220 APTIC NO. 29911

TO PREVENT HEAVY OIL COMBUSTION GAS FROM PRODUCING BLACK SMOKE.
12213 APTIC NO. 29930

CAN ADDITIVES DECREASE DIESEL SMOKE? Power, 114(8):60, Aug. 1970.
12640 APTIC NO. 30069

COMBUSTION OF WASTES CENTERING AROUND REMOVAL OF NOXIOUS GAS.
12077 APTIC NO. 29985

LOW POWER HOUSEHOLD OIL BURNING INSTALLATIONS. HOW THEY FUNCTION, PROPOSAL FOR A METHOD OF REGULATING THEM.
12079 APTIC NO. 30108

A NEW METHOD OF MEASURING THE OPACITY OF COMBUSTION FUMES.
12249 APTIC NO. 29068

THEORETICAL CONSIDERATION IN THE MEASUREMENT OF SMOKE PARTICLES BY OWL (II) - EFFECT OF DISPERSION.
12298 APTIC NO. 29483

GC-MS ANALYSIS OF THE SEMI-VOLATILES OF CIGARETTE SMOKE.
12282 APTIC NO. 29660

APPLICATION OF FLUORIMETRY IN SMOKE MEASUREMENT.
12280 APTIC NO. 29704

FLAME PHOTOMETRIC DETECTION OF VOLATILE SULPHUR COMPOUNDS IN SMOKE FROM VARIOUS TYPES OF CIGARETTES.
12283 APTIC NO. 29874

EMISSION MONITORING WITH ACKNOWLEDGED MEASURING UNITS AND ANALYZERS.
12260 APTIC NO. 29955

SMOKE PLUMES MONITORED DAY AND NIGHT. PRACTICAL EXPERIENCE WITH A TV-LASER PLANT IN DUISBURG.
12247 APTIC NO. 30013

PIEZOLECTRIC-ELECTROSTATIC AEROSOL MASS CONCENTRATION MONITOR.
12331 APTIC NO. 30061

AIR POLLUTION BY SMOKE AND SO2.
12372 APTIC NO. 29289

AIR POLLUTION.
12363 APTIC NO. 29510

AIR POLLUTION BY SMOKE AND SO2.
12373 APTIC NO. 29566

CLEANER AIR IN LONDON.
12377 APTIC NO. 29912

CONCASTER, AN AREA STUDY.
12366 APTIC NO. 30047

EVOLUTION OF THE ATMOSPHERIC CONTAMINATION IN MADRID IN 1969.
12371 APTIC NO. 30089

PROBLEMS OF AIR POLLUTION AND MEASURES TO COMBAT IT IN EL PASO, TEXAS.
12368 APTIC NO. 30094

DISTRIBUTION OF POLLUTION AT SOME COUNTRY SITES.
12425 APTIC NO. 29582

AIR POLLUTION CONTROL SYSTEM (1).
12401 APTIC NO. 29795

ESTIMATION OF GROUND LEVEL CONCENTRATION BY SMOKE-DIFFUSION WIND TUNNELS.
12462 APTIC NO. 29820

TURBULENT DIFFUSION THEORY TAKING TURBULENT BOUNDARY LAYER INTO CONSIDERATION.
12463 APTIC NO. 29822

ON ADHESION OF SMOKE MIST PARTICULATES FLOWING THROUGH BETWEEN PLAN PARALLEL PLATES.
12518 APTIC NO. 2972[illegible]

ITAI-ITAI (OUCH-OUCH) DISEASE AND CADMIUM POLLUTION IN JAPAN.
12581 APTIC NO. 29673

EFFECTS OF SOOT AND SMOKE ON THE HEALTH OF SCHOOL CHILDREN.
12556 APTIC NO. 29791

SOME RECENT TOPICS IN AIR POLLUTION AND HEALTH IN LONDON.
12562 APTIC NO. 29882

CHANGES IN AIRWAYS CONDUCTANCE ON SMOKING A CIGARETTE.
12540 APTIC NO. 30135

STUDIES ON THE SMOKE DAMAGE OF TREES. (I) ON THE ACUTE DAMAGE SYMPTOMS BY THE SO2.
12607 APTIC NO. 29976

THE PREVENTION OF POLLUTION. PART II-POLLUTION AND THE LAW.
12658 APTIC NO. 29474

EXPANSION AND STRENGTHENING OF AIR POLLUTION CONTROL COUNTERMEASURES.
12671 APTIC NO. 29495

COLLECTION OF LEGISLATIONS RELATED WITH MITI CONCERNING POLLUTIONS.
12646 APTIC NO. 29504

ON THE BASIC LAW FOR ENVIRONMENTAL POLLUTION CONTROL, NOISE CONTROL LAW, WATER POLLUTION PREVENTION LAW, AND AIR POLLUTION PREVENTION LAW.
12670 APTIC NO. 29509

ADDENDUM TO ENVIRONMENTAL POLLUTIONS IN KAWASAKI CITY.
12647 APTIC NO. 29511

PRESENT SITUATION OF ADMINISTRATION CONCERNING POLLUTIONS.
12648 APTIC NO. 29598

CHIBA PREFECTURAL ORDINANCE ON POLLUTIONS CONTROL AND ENFORCEMENT REGULATION OF ORDINANCE.
12649 APTIC NO. 29679

NOBODY BREATHES FRESH AIR. FACTS AND ARGUMENTS ABOUT AIR POLLUTION.
12677 APTIC NO. 29459

SMOKING

GC-MS ANALYSIS OF THE SEMI-VOLATILES OF CIGARETTE SMOKE.
12282 APTIC NO. 29660

CIGARETTE SMOKING: OBJECTIVE EVIDENCE FOR LUNG DAMAGE IN TEEN-AGERS.
12342 APTIC NO. 30097

PULMONARY COMPLICATIONS OF ASBESTOS EXPOSURE.
12552 APTIC NO. 29221

RAPID ASSESSMENT OF TESTS OF POLLUTANT EFFECTS IN MAN.
12536 APTIC NO. 29431

CANCER MORTALITY IN RELATION TO NATIONAL CONSUMPTION OF CIGARETTES, SOLID FUEL, TEA AND COFFEE.
12585 APTIC NO. 29608

LEAD MEN HEADING TOWARD DESTRUCTION--SPREADING OMINOUS METAL POLLUTIONS.
12569 APTIC NO. 29789

ATMOSPHERIC POLLUTIONS AND HEALTH.
12537 APTIC NO. 29971

THE ROLE OF TRACE METALS IN CHEMICAL CARCINOGENESIS: ASBESTOS CANCERS.
12543 APTIC NO. 29993

SOME HEALTH SURVEY RESULTS OF UNDERGROUND GARAGE WORKERS.
12568 APTIC NO. 30074

CHANGES IN AIRWAYS CONDUCTANCE ON SMOKING A CIGARETTE.
12540 APTIC NO. 30133

SNOW

SCAVENGING BY SNOW AND ICE CRYSTALS.
12456 APTIC NO. 29707

PARTICLE AND DEUTERIUM CONTENT IN SNOW.
12449 APTIC NO. 29775

LEAD MEN HEADING TOWARD DESTRUCTION--SPREADING OMINOUS METAL POLLUTIONS.
12569 APTIC NO. 29789

SOCIAL ATTITUDES

PLAIN TALK FOR EQUIPMENT SELLERS--AND BUYERS.
12089 APTIC NO. 29618

TOWARD A RATIONAL POWER POLICY: RECONCILING NEEDS FOR ENERGY AND ENVIRONMENTAL PROTECTION.
12403 APTIC NO. 29986

CASTING WORK ENVIRONMENTS AND PUBLIC NUISANCE.
12655 APTIC NO. 29975

THE ENVIRONMENTAL CRISIS: THROUGH A GLASS DARKLY.
12674 APTIC NO. 29619

AIR POLLUTION--THE STATUS TODAY.
12681 APTIC NO. 28923

NOBODY BREATHES FRESH AIR. FACTS AND ARGUMENTS ABOUT AIR POLLUTION.
12677 APTIC NO. 29459

ENVIRONMENT PRESERVATION - FROM THE ECOLOGICAL POINT OF VIEW.
12678 APTIC NO. 29961

SOCIO-ECONOMIC FACTORS

MARKET DEVELOPMENT IN GAS ECONOMY.
12010 APTIC NO. 29781

ON PUBLIC NUISANCE BY, AND ENVIRONMENTAL HYGIENE OF, PAINT MANUFACTURING INDUSTRY.
12059 APTIC NO. 29761

STUDY ON THE STRENGTH OF SUPER-HIGH ASSEMBLED MULTI-CYLINDER TYPE STACK.
12184 APTIC NO. 30093

METHODS FOR MEASURING AND EVALUATING ODOROUS AIR POLLUTANTS AT THE SOURCE AND IN THE AMBIENT AIR.
12246 APTIC NO. 29891

THE RESEARCH FOR THE EFFECTS OF AIR POLLUTION ON THE HUMAN BODY. (II) THE RELATIONSHIP BETWEEN ASTHMA-LIKE DISEASES OF THE SCHOOL CHILDREN AND AIR POLLUTION IN KITAKYUSHU.
12524 APTIC NO. 29683

AIR POLLUTION.
12575 APTIC NO. 29949

ON OUTLINE OF MACHINERY CREDIT INSURANCE AND ITS APPLICATION TO DUST COLLECTION EQUIPMENT.
12634 APTIC NO. 30087

CASTING WORK ENVIRONMENTS AND PUBLIC NUISANCE.
12655 APTIC NO. 29975

LEGAL ASPECTS OF AIR POLLUTION IN BELGIUM AND OTHER NEIGHBORING COUNTRIES.
12659 APTIC NO. 30040

LONG RANGE PLANNING IN AIR RESOURCE MANAGEMENT.
12657 APTIC NO. 30056

OUR ENVIRONMENT--OPTIONS ON THE WAY INTO THE FUTURE.
12675 APTIC NO. 29722

SODIUM CARBONATE

METAL COMPONENTS OF FLOATING DUST.
12286 APTIC NO. 29464

KINETICS OF THE REACTION BETWEEN THE SOLID SODIUM CARBONATE AND THE GASEOUS SULPHUR DIOXIDE. VI. STATISTICAL MOLECULAR MODEL OF THE EXCESS KINETIC FUNCTION.
12487 APTIC NO. 29702

SODIUM CHLORIDE

INVESTIGATION OF HEAVY OIL DESULFURIZATION IN FIXED-BED CONTACT REACTORS.
12196 APTIC NO. 29931

JIS ANALYTICAL PROCESS FOR NITROGEN OXIDES IN WASTE GAS.
12355 APTIC NO. 29677

COAGULATION OF DUST PARTICLES, IN PARTICULAR BY AEROSOLS OF SEA WATER SALT.
ERROR

OBSERVATIONS ON THE FIGHT AGAINST DUST BY MEANS OF SALINE AEROSOLS.
12475 APTIC NO. 29551

SHAPE FACTORS FOR AIRBORNE PARTICLES.
12503 APTIC NO. 30083

AIR POLLUTION AND ATMOSPHERIC CORROSION.
12613 APTIC NO. 29222

COMPLEX ALKALI IRON SULFATES A CONTRIBUTION TO THE THERMODYNAMICS OF FIRESDIDE HIGH-TEMPERATURE CORROSION.
12616 APTIC NO. 29783

CORROSION OF NACL-CONTAMINATED FE IN HUMID ATMOSPHERE OF LOW O2 CONTENT.
12621 APTIC NO. 30112

MATERIALS FOR REFERENCE ABOUT ENVIRONMENTAL POLLUTION CONTROL.
12651 APTIC NO. 29818

SODIUM COMPOUNDS

TWO NEW PROCESSES FOR RECOVERY OF SULPHUR OXIDES FROM SMELTER GASES.
12307 APTIC NO. 29200

AIR POLLUTION: CONTROLLED OPERATION OF A NSSC RECOVERY FURNACE.
12127 APTIC NO. 29621

EXHAUST GAS PURIFIER.
12179 APTIC NO. 29905

INVESTIGATION OF HEAVY OIL DESULFURIZATION IN FIXED-BED CONTACT REACTORS.
12196 APTIC NO. 29931

COMBUSTION OF WASTES CENTERING AROUND REMOVAL OF NOXIOUS GAS.
12077 APTIC NO. 29985

REDUCING SO2 EMISSION FROM STATIONARY SOURCES.
12098 APTIC NO. 30102

LOSS OF MERCURY FROM CHLORALKALI PLANTS.
12120 APTIC NO. 30117

METAL COMPONENTS OF FLOATING DUST.
12286 APTIC NO. 29464

ON THE EFFECT OF ACCOMPANYING GASES IN QUANTITATIVE ANALYSIS OF HYDROGEN SULFIDE USING METHYLENE BLUE.
12343 APTIC NO. 29505

OXIDATION OF NITROGEN MONOXIDE.
12320 APTIC NO. 29676

JIS ANALYTICAL PROCESS FOR NITROGEN OXIDES IN WASTE GAS.
12355 APTIC NO. 29677

MEASUREMENT OF GASEOUS AND PARTICULATE FLUORINE EMISSIONS.
12322 APTIC NO. 29738

TESTS WITH A SAMPLING AND MEASUREMENT METHOD FOR ROUTINE DETERMINATION OF FLUORINE IN THE LOWER ATMOSPHERE.
12262 APTIC NO. 29807

CORRECTION: DETERMINATION OF HYDROGEN SULFIDE, SULFUR DIOXIDE, CARBONYL SULFIDE, CARBON DISULFIDE, AND CARBON DIOXIDE IN A GAS MIXTURE.
12341 APTIC NO. 30120

SOME ASPECTS OF THE METAL ION CHEMISTRY OF THE EARTH'S ATMOSPHERE.
12421 APTIC NO. 28891

BORDEAUX. STUDY OF ATMOSPHERIC POLLUTION IN THE BUILT-UP AREA.
12420 APTIC NO. 30109

COAGULATION OF DUST PARTICLES, IN PARTICULAR BY AEROSOLS OF SEA WATER SALT.
ERROR

OBSERVATIONS ON THE FIGHT AGAINST DUST BY MEANS OF SALINE AEROSOLS.
12475 APTIC NO. 29551

KINETICS OF THE REACTION BETWEEN THE SOLID SODIUM CARBONATE AND THE GASEOUS SULPHUR DIOXIDE. VI. STATISTICAL MOLECULAR MODEL OF THE EXCESS KINETIC FUNCTION.
12487 APTIC NO. 29702

SHAPE FACTORS FOR AIRBORNE PARTICLES.
12503 APTIC NO. 30085

RENAL FUNCTION DURING PROLONGED EXPOSURE TO HYPOXIA AND CARBON MONOXIDE. II. ELECTROLYTE HANDLING.
12577 APTIC NO. 29805

AIR POLLUTION AND ATMOSPHERIC CORROSION.
12613 APTIC NO. 29222

COMPLEX ALKALI IRON SULFATES A CONTRIBUTION TO THE THERMODYNAMICS OF FIRESDIDE HIGH-TEMPERATURE CORROSION.
12616 APTIC NO. 29783

PROBLEMS IN INDUSTRIAL POWER PLANTS.
12618 APTIC NO. 29956

CORROSION OF NACL-CONTAMINATED FE IN HUMID ATMOSPHERE OF LOW O2 CONTENT.
12631 APTIC NO. 30112

MATERIALS FOR REFERENCE ABOUT ENVIRONMENTAL POLLUTION CONTROL.
12651 APTIC NO. 29818

SODIUM HYDROXIDE

EXHAUST GAS PURIFIER.
12179 APTIC NO. 29905

REDUCING SO2 EMISSION FROM STATIONARY SOURCES.
12098 APTIC NO. 30102

LOSS OF MERCURY FROM CHLORALKALI PLANTS.
12120 APTIC NO. 30117

ON THE EFFECT OF ACCOMPANYING GASES IN QUANTITATIVE ANALYSIS OF HYDROGEN SULFIDE USING METHYLENE BLUE.
12343 APTIC NO. 29505

JIS ANALYTICAL PROCESS FOR NITROGEN OXIDES IN WASTE GAS.
12355 APTIC NO. 29677

SODIUM SULFITE

TWO NEW PROCESSES FOR RECOVERY OF SULPHUR OXIDES FROM SMELTER GASES.
12207 APTIC NO. 29200

COMPLEX ALKALI IRON SULFATES A CONTRIBUTION TO THE THERMODYNAMICS OF FIRESDIDE HIGH-TEMPERATURE CORROSION.
12616 APTIC NO. 29783

SOILING INDEX

INDOOR/OUTDOOR AIR QUALITY RELATIONSHIPS.
12398 APTIC NO. 30090

SOILS

HEAVY METAL POLLUTION IN THE ONAHAMA INDUSTRIAL AREA. 1ST REPORT. DISTRIBUTION OF HEAVY METALS IN SOIL.
12006 APTIC NO. 29539

AIR POLLUTION BY LEAD AND ZINC IN THE AREA OF COMBINED METALLURGICA WORKS AND ITS INFLUENCE ON VEGETATION AND SOIL.
12031 APTIC NO. 29572

PESTICIDES IN AIR. VOLATILIZATION OF SOIL-APPLIED DDT AND DDD FROM FLOODED AND NONFLOODED PLOTS.
12047 APTIC NO. 29620

INVESTIGATION OF HEAVY METAL POLLUTION IN IWAKI CITY.
12007 APTIC NO. 29787

PLANTS AND SOILS AS INDICATORS OF METALS IN THE AIR.
12281 APTIC NO. 30113

ON HYGIENIC AND TOXICOLOGICAL PROBLEMS OF POLLUTION BY ARSENIC.
12534 APTIC NO. 29587

ON THE BASIC LAW FOR ENVIRONMENTAL POLLUTION CONTROL, NOISE CONTROL LAW, WATER POLLUTION PREVENTION LAW, AND AIR POLLUTION PREVENTION LAW.
12670 APTIC NO. 29509

SOLAR RADIATION

NEW WAYS TO MORE POWER WITH LESS POLLUTION.
12166 APTIC NO. 29658

ON THE MEASUREMENT AND ABSOLUTE CALIBRATION OF THE STRENGTH OF SOLAR RADIATION ENERGY.
12348 APTIC NO. 29863

A COMPREHENSIVE SAMPLING SYSTEM FOR STUDYING THE RELATION BETWEEN VISIBILITY, METEOROLOGICAL PARAMETERS AND ATMOSPHERIC POLLUTION.
12276 APTIC NO. 30082

PHOTOCHEMICAL SMOG.
12418 APTIC NO. 29672

AN EXPERIMENTAL STUDY OF PHOTOCHEMICAL OXIDATION OF ORGANIC SUBSTANCES IN THE ATMOSPHERE.
12441 APTIC NO. 29681

RADIANCE AND POLARIZATION OF LIGHT REFLECTED FROM OPTICALLY THICK CLOUDS.
12429 APTIC NO. 29915

STANDARD FADING CLOTHES FOR OXIDANTS.
12619 APTIC NO. 29866

INDUSTRIAL EMISSIONS: AN ANALYSIS OF SOME KEY FACTORS.
12669 APTIC NO. 29469

SOLID WASTE DISPOSAL

DESIGN OF NEW SILVER-RECOVERY INCINERATOR.
12008 APTIC NO. 29635

RECENT TREND AND PROBLEMS OF INDUSTRIAL WASTES TREATING EQUIPMENT.
12041 APTIC NO. 29827

TREATMENT OF MUNICIPAL TRASH BY SANITATION TRUCK.
12049 APTIC NO. 29979

POLLUTION TECHNOLOGY--WHAT THEY RE DOING OVERSEAS.
12244 APTIC NO. 29650

LOSS OF MERCURY FROM CHLORALKALI PLANTS.
12120 APTIC NO. 30117

LEAD SMELTING PLANT CONTROLS AIR EMISSIONS.
12069 APTIC NO. 30124

THE PREVENTION OF POLLUTION.
12416 APTIC NO. 29623

A FEW OBSERVATION ON THE GENERATION MECHANISM OF OBNOXIOUS ODOR.
12517 APTIC NO. 29649

THE ECONOMIC IMPORTANCE OF HEAT RECOVERY FROM HOUSEHOLD REFUSE INCINERATORS.
12625 APTIC NO. 29992

THE PREVENTION OF POLLUTION. PART II-POLLUTION AND THE LAW.
12658 APTIC NO. 29474

TOKYO FIGHTS POLLUTION. AN URGENT APPEAL FOR REFORM.
12653 APTIC NO. 29888

ENVIRONMENT PRESERVATION - FROM THE ECOLOGICAL POINT OF VIEW.
12678 APTIC NO. 29961

SOLIDS

INTERACTIONS OF CLOUD CONDENSATION NUCLEI AND ICE NUCLEI WITH CLOUD AND PRECIPITATION ELEMENTS: A REVIEW.
12443 APTIC NO. 29892

SCAVENGING BY SNOW AND ICE CRYSTALS.
12456 APTIC NO. 29707

CONTINUOUS CHARGED CLOUD-PARTICLE SAMPLER.
12451 APTIC NO. 29712

PARTICLE AND DEUTERIUM CONTENT IN SNOW.
12449 APTIC NO. 29775

SCALE-UP OF LABORATORY FLUID-BED DATA: THE SIGNIFICANCE OF SLUG FLOW.
12501 APTIC NO. 29494

THERMAL AND DIFFUSIONAL EFFECTS IN NONCATALYTIC SOLID GAS REACTIONS.
12522 APTIC NO. 29612

THE REACTION OF OZONE WITH SOLID POLYSTYRENE.
12505 APTIC NO. 29666

DEPOSITION OF LIQUID OR SOLID DISPERSIONS FROM TURBULENT GAS STREAMS: A STOCHASTIC MODEL.
12494 APTIC NO. 29873

SOLVENTS

THE CALCULATION OF MIXED HYDROCARBON-OXYGENATED SOLVENT EVAPORATION.
12038 APTIC NO. 29526

A PROGRAM TO SAMPLE AND ANALYZE AIR POLLUTION IN THE VICINITY OF A CHEMICAL RECLAMATION PLANT.
12039 APTIC NO. 29698

A NEW ENVIRONMENTAL POLLUTANT - POLYCHLORINATED BIPHENYLS (PCB).
12044 APTIC NO. 29984

ONE ANSWER TO PLASTICIZER POLLUTION.
11991 APTIC NO. 30028

FUME INCINERATION: EFFECTIVE, EFFICIENT.
12100 APTIC NO. 30077

STUDY OF TRACES OF HEAVY ORGANIC PRODUCTS IN FUEL COMBUSTION GASES. (Etude des traces de produits organiques lourds dans les fumees de combustion de fuel). Text in French. Rev. Gen. Thermique (Paris), 10(111):223-238, March 1971. 90 refs.
12310 APTIC NO. 29766

THE INFLUENCE OF ENVIRONMENTAL PROTECTION ON PLANNING, OPERATION AND ECONOMY OF STEAM POWER PLANTS. I. MAINTENANCE OF CLEAN AIR.
12036 APTIC NO. 29519

PHYSICAL-CHEMICAL PROBLEMS OF AIR POLLUTION.
11996 APTIC NO. 29786

EXPERIMENTAL STUDY ON PLASTICS INCINERATION.
12017 APTIC NO. 29841

CAUSES, MEASUREMENT AND LIMITATION OF PARTICULATE EMISSION FROM OIL-FIRED STEAM BOILERS.
12080 APTIC NO. 30021

CONTROL OF OIL-FIRED HEATERS, A MODERN COMMUNAL TASK.
12015 APTIC NO. 30100

JET AIRCRAFT AIR POLLUTANT PRODUCTION AND DISPERSION.
12016 APTIC NO. 30130

EXHAUST GAS CLEANER FOR DIESEL ENGINES.
12221 APTIC NO. 29533

PREVENTION OF AIR POLLUTION ON IRON FOUNDRY.
12178 APTIC NO. 29602

ENVIRONMENTAL POLLUTION CONTROL MEASURES IN WEST EUROPE AND PROBLEMS OF CARBIDE ELECTRIC FURNACE DUST IN JAPAN.
12073 APTIC NO. 29675

GASIFICATION OF HYDROCARBONS.
12137 APTIC NO. 29779

MODERN OIL BURNING TECHNOLOGY AS DISPLAYED ON THE INTHERM IN STUTTGART AND THE 6.ISH IN FRANKFURT 1971.
12187 APTIC NO. 29824

COMBUSTION PLANT FOR RUBBER-COATED EQUIPMENT, TANKS AND CABLES.
12191 APTIC NO. 29834

DESULFURIZATION OF EXHAUST GAS.
12078 APTIC NO. 29927

TO PREVENT HEAVY OIL COMBUSTION GAS FROM PRODUCING BLACK SMOKE.
12213 APTIC NO. 29930

COMBUSTION OF WASTES CENTERING AROUND REMOVAL OF NOXIOUS GAS.
12077 APTIC NO. 29985

CONTROL OF POLLUTANT EMISSION AND SULPHURIC ACID CORROSION FROM COMBUSTION OF RESIDUAL FUEL OIL. PART I: LOW-PRESSURE HEATING BOILERS WITH MECHANICAL ATOMIZING BURNERS.
12164 APTIC NO. 30055

DETERMINATION OF THE SOOT INDEX IN WASTE GASES OF OIL BURNERS.
12257 APTIC NO. 29749

STUDY OF TRACES OF HEAVY ORGANIC PRODUCTS IN FUEL COMBUSTION GASES. (Etude des traces de produits organiques lourds dans les fumees de combustion de fuel). Text in French. Rev. Gen. Thermique (Paris), 10(111):223-238, March 1971. 90 refs.
12310 APTIC NO. 29766

DETERMINATION OF POLYNUCLEAR AROMATICS IN SUSPENDED PARTICLES.
12393 APTIC NO. 29462

TEN YEARS OF AIR POLLUTION IN HOKKAIDO.
12367 APTIC NO. 29727

A REPORT OF THE PERIODIC MEASUREMENT OF SOOT AND DUST, AND SULFUR OXIDES IN THE AIR AROUND THE HOSPITAL.
12381 APTIC NO. 29794

ITAI-ITAI (OUCH-OUCH) DISEASE AND CADMIUM POLLUTION IN JAPAN.
12581 APTIC NO. 29673

EFFECTS OF SOOT AND SMOKE ON THE HEALTH OF SCHOOL CHILDREN.
12556 APTIC NO. 29791

IT BEGAN WITH THE SMOG IN CALIFORNIA. CALIFORNIA TEST, EUROPEAN TEST--INTERNATIONAL REGULATIONS OF AUTOMOBILE EXHAUST GAS EMISSIONS.
12640 APTIC NO. 30069

EXPANSION AND STRENGTHENING OF AIR POLLUTION CONTROL COUNTERMEASURES.
12671 APTIC NO. 29495

COLLECTION OF LEGISLATIONS RELATED WITH MITI CONCERNING POLLUTIONS.
12646 APTIC NO. 29504

ON THE BASIC LAW FOR ENVIRONMENTAL POLLUTION CONTROL, NOISE CONTROL LAW, WATER POLLUTION PREVENTION LAW, AND AIR POLLUTION PREVENTION LAW.
12670 APTIC NO. 29509

ADDENDUM TO ENVIRONMENTAL POLLUTIONS IN KAWASAKI CITY.
12647 APTIC NO. 29511

CHIBA PREFECTURAL ORDINANCE ON POLLUTIONS CONTROL AND ENFORCEMENT REGULATION OF ORDINANCE.
12649 APTIC NO. 29679

SOOT FALL

TEN YEARS OF AIR POLLUTION IN HOKKAIDO.
12367 APTIC NO. 29727

ON AIR POLLUTION IN MIZUSHIMA AREA.
12390 APTIC NO. 29895

SOURCE SAMPLING

AIR POLLUTION TEST METHODS COMPARED IN INCINERATOR EVALUATION PROGRAM.
12119 APTIC NO. 29837

EXPERIENCES WITH FLUORINE EMISSION MEASUREMENTS.
12290 APTIC NO. 29737

MEASUREMENT OF GASEOUS AND PARTICULATE FLUORINE EMISSIONS.
12322 APTIC NO. 29738

PRODUCTION OF GASES OF KNOWN SPECIFIC ACTIVITY IN A REACTOR FOR CALIBRATING GASEOUS EFFLUENT MONITORS.
12264 APTIC NO. 29848

SOURCE SAMPLING OF ATMOSPHERIC CONTAMINANTS.
12248 APTIC NO. 30118

SO2 REMOVAL (COMBUSTION P

BASIC RESEARCH ON SMOKE DESULFURIZATION BY LIME-METALS, 2ND REPORT - EFFECT OF METAL ADDITION ON CALCINATION OF LIME.
12153 APTIC NO. 29080

TWO NEW PROCESSES FOR RECOVERY OF SULPHUR OXIDES FROM SMELTER GASES.
12207 APTIC NO. 29200

PROCESS FOR THE SEPARATION OF SULFUR FROM GAS.
12052 APTIC NO. 29273

BASIC RESEARCH ON SMOKE DESULFURIZATION BY LIME-METALS, 1ST REPORT - DESULFURIZATION EFFECT BY ADDITION OF METAL.
12154 APTIC NO. 29478

STUDY ON MECHANISM OF REACTION WITH SULFUR DIOXIDE OF LIMESTONE POWDER BLOWN INTO COMBUSTION GAS.
12146 APTIC NO. 29479

ON CONDITIONS FOR PROPER USE OF ACTIVATED CARBON AS AN AIR PURIFI-

CATION AGENT (2) - ITS EFFICIENCY FOR REMOVAL OF SO2 GAS.
12113 APTIC NO. 29496

ADSORPTION OF SULFUR DIOXIDE GAS BY ACTIVATED CARBON OR MOLECULAR SIEVE.
12201 APTIC NO. 29497

EXHAUST GAS CLEANER FOR DIESEL ENGINES.
12221 APTIC NO. 29533

THE NEW PLANT FOR PRODUCTION OF SULFUR DIOXIDE AT LEVERKUSEN.
12203 APTIC NO. 29577

OUTLOOK OF ENVIRONMENTAL POLLUTION AND ITS PREVENTION TECHNOLOGY.
12124 APTIC NO. 29600

PREVENTION OF AIR POLLUTION ON IRON FOUNDRY.
12178 APTIC NO. 29602

MODERN SULFURIC ACID TECHNOLOGY.
12093 APTIC NO. 29607

DESULFURIZATION OF LIQUEFIED PROPANE GAS. MOLECULAR SIEVE PROCESS.
12053 APTIC NO. 29617

AIR POLLUTION: CONTROLLED OPERATION OF A NSSC RECOVERY FURNACE.
12127 APTIC NO. 29621

SMELTER POLLUTION CONTROL--FACTS AND PROBLEMS.
12076 APTIC NO. 29622

LAW-MAKERS SAY: CLEAN UP OR SHUT DOWN.
12055 APTIC NO. 29628

FEASIBILITY STUDY OF NEW SULFUR OXIDE CONTROL PROCESSES FOR APPLICATION TO SMELTERS AND POWER PLANTS. PART IV: THE WELLMAN-LORD SO2 RECOVERY PROCESS FOR APPLICATION TO POWER PLANT FLUE GASES. (FINAL REPORT).
12208 APTIC NO. 29641

COUNTERMEASURES ON PREVENTION OF INDUSTRIAL POLLUTIONS--PART II ON SULFURIC ACID GAS.
12210 APTIC NO. 29646

METHOD TO REMOVE HARMFUL SUBSTANCES FROM STACK GAS BY-PRODUCING AMMONIUM SULFATE AND OTHERS (XV) - ACTIVATION ENERGY OF ACTIVATED CARBON FOR SO2 ADSORPTION.
12161 APTIC NO. 29648

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

TECHNOLOGY RENDERS ITS SERVICES TO AIR PURIFICATION AND NOISE SUPPRESSION AS PART OF ENVIRONMENTAL HYGIENE.
12227 APTIC NO. 29725

ABSORPTION OF SULFUROUS ACID GAS BY WATER SOLUTION OF POTASSIUM PHOSPHATE.
12172 APTIC NO. 29731

ON REGENERATION OF ACTIVATED CARBON HAVING ADSORBED SO2.
12173 APTIC NO. 29732

SEPARATION OF CO2 AND H2S FROM GAS MIXTURES.
12066 APTIC NO. 29752

ADSORPTIVITY OF DESULFURIZING ACTIVATED CARBON FOR SULFUROUS ACID GAS (II) - EFFECT OF THE ADSORPTION - RINSING PROCESS ON THE ADSORPTIVITY.
12238 APTIC NO. 29788

ALKALI AND HEAT RECOVERY IN THE FLUE GASES FROM RECOVERY BOILERS.
12193 APTIC NO. 29852

DESULFURIZATION OF EXHAUST GAS.
12078 APTIC NO. 29927

EQUALIZATION OF PARTICLE TRANSFER IN TRANSFERABLE STRATUM.
12144 APTIC NO. 29928

ADSORPTIVITY OF DESULFURIZING ACTIVATED CARBON FOR SULFUROUS ACID GAS (I). PERFORMANCE VARIATION OF ACTIVATED CARBON IN PILOT PLANT.
12206 APTIC NO. 29939

STUDIES ON AIR POLLUTION CONTROL BY ADDITIVE INJECTION. PART II - PREVENTION OF CLOGGING AT HIGH TEMPERATURE HEATING SURFACE OF BOILER BY ADDING MG(OH)2 POWDER.
12075 APTIC NO. 29941

ACTIVATED CARBON INDUSTRY AND PROBLEMS IN FUTURE - SPHERICAL ACTIVATED CARBON FROM COAL.
12235 APTIC NO. 29942

DESULFURIZATION OF WASTE GASES AND FUELS.
12205 APTIC NO. 29957

STUDY ON THE DESULFURIZATION OF FLUE GAS BY THE USE OF DRY LIME.
12198 APTIC NO. 29972

USE OF VANADIUM CATALYSTS IN PURIFYING INDUSTRIAL WASTE GASES FROM SULFUR DIOXIDE.
12087 APTIC NO. 29980

METHOD FOR MANUFACTURING SPHERICAL ACTIVE CARBON FROM COAL.
12141 APTIC NO. 29988

KINETICS OF RECOVERING SULFUR FROM THE SPENT SEED IN AN MHD POWER PLANT.
12118 APTIC NO. 30048

PROCESS FOR REMOVING SULPHUR FROM GASES.
12139 APTIC NO. 30049

CATALYTIC REDUCTION OF SULFUR DIOXIDE ON IRON-ALUMINA BIFUNCTIONAL CATALYSTS.
12152 APTIC NO. 30064

SULFURIC ACID, SO2 DEVELOPMENTS: REMOVING SO2 AND ACID MIST WITH VENTURI SCRUBBERS.
12209 APTIC NO. 30080

THE SCRUBBING OF TAIL GAS FROM SULFURIC ACID PLANTS.
12067 APTIC NO. 30096

ANNUAL SURVEY ON CUPOLA FURNACES, SEQUENCE EIGHT.
12101 APTIC NO. 30101

REDUCING SO2 EMISSION FROM STATIONARY SOURCES.
12098 APTIC NO. 30102

STUDY ON DESULFURIZATION BY THE INJECTION OF LIMESTONE POWDER INTO FURNACE OF OIL FIRING BOILER (PART I).
12145 APTIC NO. 30131

NO-X CONTROL FROM STATIONARY SOURCES.
12427 APTIC NO. 29764

SULFUR RECOVERY IN THE MANUFACTURE OF PIPELINE GAS FROM COAL.
12635 APTIC NO. 29143

AN SO2 REMOVAL AND RECOVERY PROCESS.
12630 APTIC NO. 29144

INDUSTRIAL REACTION TO SULPHUR DIOXIDE CONTROL EQUIPMENT AND STANDARDS.
12637 APTIC NO. 29604

SPARK IGNITION ENGINES

COMBUSTION REGULARITY A KEY TO SPARK-IGNITION ENGINE EMISSIONS REDUCTION? Preprint, Academia R. P. R., Bucharest, 15p., 1970. 4 refs. (Presented at the Internal Combustion Engines Conference, 2nd International, Bucharest (Rumania), 1970.)
12023 APTIC NO. 27641

EMISSION CONTROL BY EXHAUST MANIFOLD REACTOR--AN INITIAL STUDY FOR SMALL ENGINES.
12163 APTIC NO. 29629

CONTROL OF EXHAUST GAS EMISSION OF MITSUBISHI COLT GALANT.
12228 APTIC NO. 29901

SPECTROPHOTOMETRY

DETERMINATION OF LEAD CONTENTS IN AUTOMOBILE EXHAUST GAS.
12013 APTIC NO. 29661

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

THE MEASUREMENT OF ATMOSPHERIC POLLUTION IN GERMANY.
12340 APTIC NO. 29066

LUMINESCT SPECTROMETER ANALYSIS METHOD OF QUANTITATIVE ANALYSIS OF METALS IN DUST FLOATING IN ATMOSPHERE.
12279 APTIC NO. 29466

NEW METHODS OF DETERMINING AIR POLLUTION.
12316 APTIC NO. 29595

TRIAL CONSTRUCTION OF NON-DISPERSION TYPE VISIBLE LIGHT GAS ANALYZE AND DETERMINATION OF NITROGEN DIOXIDE, CHLORINE, AND BROMINE.
12303 APTIC NO. 29762

STUDY OF TRACES OF HEAVY ORGANIC PRODUCTS IN FUEL COMBUSTION GASES. (Etude des traces de produits organiques lourds dans les fumees de combustion de fuel) Text in French. Rev. Gen. Thermique (Paris), 10(111):223-238, March 1971. 90 refs.
12310 APTIC NO. 29766

FLUOROMETRIC DETERMINATION OF BROMINE: APPLICATION TO MEASUREMENT OF BROMINE AEROSOLS.
12253 APTIC NO. 29811

ENVIRONMENTAL POLLUTION AND ITS MEASUREMENTS (II).
12338 APTIC NO. 29843

PARALLEL DETERMINATION OF NICKEL AND COBALT IN URINE AND ATMOSPHERE.
12300 APTIC NO. 29953

STUDIES IN INDOOR SWIMMING POOLS WITH OZONIZATION PLANTS.
12353 APTIC NO. 29999

FILTER METHOD FOR THE MEASUREMENT OF ATMOSPHERIC HYDROGEN SULFIDE.
12330 APTIC NO. 30004

DETERMINATION AND EVALUATION OF LOW CONCENTRATIONS OF INDUSTRIAL AIR POLLUTANTS.
12309 APTIC NO. 30014

BENZPYRENE AND OTHER AROMATIC HYDROCARBONS IN THE DUST OF POLISH TOWNS.
12385 APTIC NO. 29569

NEW EYE ON THE AIR.
12412 APTIC NO. 29644

CONCENTRATION VARIATION OF SOME TRACE METALS IN PRECIPITATION FROM GREAT PLAINS THUNDERSTORMS.
12457 APTIC NO. 29706

MECHANISM OF SINGLET MOLECULAR OXYGEN FORMATION FROM PHOTOLYSIS OF OZONE AT 2537 A.
12424 APTIC NO. 30110

THE ULTRA-VIOLET PHOTOLYSIS OF OZONE IN THE PRESENCE OF MOLECULAR OXYGEN.
12500 APTIC NO. 29778

SEMI-AUTOMATIC DETERMINATION OF LEAD IN WIDE BLOOD.
12565 APTIC NO. 29663

CHEMISTRY OF SINGLET OXYGEN. X. CAROTENOID QUENCHING PARALLELS BIOLOGICAL PROTECTION.
12546 APTIC NO. 29716

SOME HEALTH SURVEY RESULTS OF UNDERGROUND GARAGE WORKERS.
12568 APTIC NO. 30074

SPORES

COLLECTION EFFICIENCIES OF RAINDROPS FOR SUBMICRON PARTICULATES.
12404 APTIC NO. 29709

SPOT TESTS

REPORT FOR THE INVESTIGATION ON THE METHOD OF SO2 TEST.
12301 APTIC NO. 29381

DETERMINATION OF THE SOOT INDEX IN WASTE GASES OF OIL BURNERS.
12257 APTIC NO. 29749

THE INFLUENCE OF AIR POLLUTION UPON THE DISCOLORATION OF THE DYED STUFF AND THE DECREASE OF TENSILE STRENGTH OF SOME FIBERS.
12612 APTIC NO. 29717

SPRAY TOWERS

DESIGN OF NEW SILVER-RECOVERY INCINERATOR.
12008 APTIC NO. 29635

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

SCAVENGING OF AEROSOL PARTICLES BY SPRAYS.
12437 APTIC NO. 29711

PROGRESS REVIEW NO. 62: COMBUSTION OF SINGLE DROPLETS AND SIMPLIFIED SPRAY SYSTEMS.
12493 APTIC NO. 29803

ST LOUIS

NEW EYE ON THE AIR.
12412 APTIC NO. 29644

STABILITY (ATMOSPHERIC)

PULSED EMISSION CHIMNEY.
12082 APTIC NO. 29626

DEVELOPMENT OF A METEOROLOGICALLY CONTROLLED AGRICULTURAL BURNING PROGRAM.
12058 APTIC NO. 29724

EVOLUTION OF THE ATMOSPHERIC CONTAMINATION IN MADRID IN 1969.
12371 APTIC NO. 30089

DISTRIBUTION OF POLLUTION AT SOME COUNTRY SITES.
12425 APTIC NO. 29582

GASEOUS PLUME DIFFUSION ABOUT ISOLATED STRUCTURES OF SIMPLE GEOMETRY. (ANNUAL PROGRESS REPORT).
12438 APTIC NO. 29584

EPISODE 104.
12410 APTIC NO. 29695

ATMOSPHERIC DISPERSION OF STACK EFFLUENTS.
12458 APTIC NO. 29773

EFFECT OF THE TEMPERATURE DEPENDENCE OF OZONE ABSORPTION ON VERTICAL OZONE DISTRIBUTIONS DEDUCED FROM UMKEHR OBSERVATIONS.
12415 APTIC NO. 29875

A NUMERICAL EXPERIMENT IN SIMULATING THE TRANSPORT OF SULFUR DIOXIDE THROUGH THE ATMOSPHERE.
12446 APTIC NO. 29952

DISCUSSIONS DEPTH OF THE BOUNDARY LAYER.
ERROR

PLUME RISE: A RECENT CRITICAL REVIEW.
12408 APTIC NO. 30068

SOME RESULTS OF LIDAR PROBING OF THE TROPOSHERE.
12434 APTIC NO. 30105

PATIENT ADVICE DURING ACUTE AIR POLLUTION EPISODE.
12531 APTIC NO. 29878

ATMOSPHERIC CORROSION OF THE ELECTROLYTIC NI-CR COATINGS.
12609 APTIC NO. 30039

UNLEADED GASOLINE AND SMOG-FREE AUTOS--HOW AND WHY.
12644 APTIC NO. 30035

STACK GASES

THE INDUSTRIAL FIRING SYSTEMS OF THE 1970'S.
12025 APTIC NO. 28968

THE INFLUENCE OF ENVIRONMENTAL PROTECTION ON PLANNING, OPERATION AND ECONOMY OF STEAM POWER PLANTS. I. MAINTENANCE OF CLEAN AIR.
12036 APTIC NO. 29519

HEAVY METAL POLLUTION IN THE ONAHAMA INDUSTRIAL AREA. 1ST REPORT. DISTRIBUTION OF HEAVY METALS IN SOIL.
12006 APTIC NO. 29539

CONSIDERATIONS IN THE CONSTRUCTION OF LARGE REFUSE INCINERATORS.
12026 APTIC NO. 29547

AMMONIA DISPOSAL--COKE PLANTS.
12012 APTIC NO. 29627

QUALITATIVE ANALYSIS OF EXHAUST GAS FROM FISH MEAL PLANT.
12028 APTIC NO. 29662

INCINERATOR DESIGNED TO ANTICIPATE PROBLEMS.
11994 APTIC NO. 29669

INVESTIGATION OF HEAVY METAL POLLUTION IN IWAKI CITY.
12007 APTIC NO. 29787

THE REMOTE HEATING PLANT IN RECKLINGHAUSEN--A CONTRIBUTION TO THE PROTECTION OF THE ENVIRONMENT.
11990 APTIC NO. 29914

DECONTAMINATION OF POLLUTED AIR FROM HARD PITCH PRODUCTION PLANT.
12022 APTIC NO. 30026

ONE ANSWER TO PLASTICIZER POLLUTION.
11991 APTIC NO. 30028

OPERATING EXPERIENCE OF EVAPORATIVE COOLERS SERVING CUPOLAS AIR POLLUTION CONTROL SYSTEMS.
12034 APTIC NO. 30032

THE EMISSION AND IMMISSION CONDITIONS OF THE POWER PLANTS IN THE BOEHLENER AREA.
12045 APTIC NO. 30072

CARBON MONOXIDE AS A COMBUSTION CONTROL PARAMETER.
12072 APTIC NO. 29471

EXPERIMENTS CONCERNING STOICHIOMETRIC COMBUSTION IN OIL-FIRED FURNACES OF FRENCH POWER PLANTS.
12090 APTIC NO. 29513

HEAT EXTRACTION AIDS DEPOLLUTION OF GASES AND WATER IN CHEVROLET FOUNDRY.
12097 APTIC NO. 29523

CO BOILER OF FLUIDIZED BED TYPE CATALYTIC CRACKING PROCESS PRODUCIN NO LEAD GASOLINE.
12237 APTIC NO. 29535

THE NEW PLANT FOR PRODUCTION OF SULFUR DIOXIDE AT LEVERKUSEN.
12203 APTIC NO. 29577

PREVENTION OF AIR POLLUTION ON IRON FOUNDRY.
12178 APTIC NO. 29602

PULSED EMISSION CHIMNEY.
12082 APTIC NO. 29626

LAW-MAKERS SAY: CLEAN UP OR SHUT DOWN.
12055 APTIC NO. 29628

FEASIBILITY STUDY OF NEW SULFUR OXIDE CONTROL PROCESSES FOR APPLICATION TO SMELTERS AND POWER PLANTS. PART IV: THE WELLMAN-LORD SO2 RECOVERY PROCESS FOR APPLICATION TO POWER PLANT FLUE GASES. (FINAL REPORT).
12208 APTIC NO. 29641

METHOD TO REMOVE HARMFUL SUBSTANCES FROM STACK GAS BY-PRODUCING AMMONIUM SULFATE AND OTHERS (XV) - ACTIVATION ENERGY OF ACTIVATED CARBON FOR SO2 ADSORPTION.
12161 APTIC NO. 29648

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

DEVICE TO HOLD IN PLACE ATOMIZER NOZZLES OF A WASHER DEVICE FOR SULFUR OXIDE GAS CONTAINED IN COMBUSTION EXHAUST GAS FROM BOILER.
12138 APTIC NO. 29685

DEVELOPMENT OF A NEW DUST COLLECTOR.
12056 APTIC NO. 29686

SULFUR DIOXIDE REMOVAL FROM STACK GASES.
12215 APTIC NO. 29720

ON PUBLIC NUISANCE BY, AND ENVIRONMENTAL HYGIENE OF, PAINT MANUFACTURING INDUSTRY.
12059 APTIC NO. 29761

BAGHOUSE OPERATION AT THE WHITING, INDIANA PLANT OF THE FEDERATED METALS DIVISION AMERICAN SMELTING AND REFINING COMPANY.
12107 APTIC NO. 29772

REMOVAL OF CHLORINE FROM GASES.
12177 APTIC NO. 29802

ACID MIST PRECIPITATOR MADE OF TEFLON FIBER.
12061 APTIC NO. 29833

ALKALI AND HEAT RECOVERY IN THE FLUE GASES FROM RECOVERY BOILERS.
12193 APTIC NO. 29852

NEW PROCESS OFFERS 99.9% SULPHUR RECOVERY.
12062 APTIC NO. 29855

THE NEW DUPLEX IRON MELTING PLANT AT THE M. BUSCH KG IN WEHRSTAPEL.
12094 APTIC NO. 29861

ACTIVATED CARBON INDUSTRY AND PROBLEMS IN FUTURE - SPHERICAL ACTIVATED CARBON FROM COAL.
12235 APTIC NO. 29942

STUDY ON THE DESULFURIZATION OF FLUE GAS BY THE USE OF DRY LIME.
12198 APTIC NO. 29972

FACTORS TO CONSIDER IN SELECTING AIR POLLUTION CONTROL EQUIPMENT.
12195 APTIC NO. 29996

CONTROL OF POLLUTANT EMISSION AND SULPHURIC ACID CORROSION FROM COMBUSTION OF RESIDUAL FUEL OIL. PART I: LOW-PRESSURE HEATING BOILERS WITH MECHANICAL ATOMIZING BURNERS.
12164 APTIC NO. 30055

PULPERS APPLY ODOR CONTROL.
12104 APTIC NO. 30062

SULFURIC ACID, SO2 DEVELOPMENTS: REMOVING SO2 AND ACID MIST WITH VENTURI SCRUBBERS.
12209 APTIC NO. 30080

THE SCRUBBING OF TAIL GAS FROM SULFURIC ACID PLANTS.
12067 APTIC NO. 30096

SUMMARY OF H2SO4 MANUFACTURE.
12068 APTIC NO. 30099

REDUCING SO2 EMISSION FROM STATIONARY SOURCES.
12098 APTIC NO. 30102

STUDY ON DESULFURIZATION BY THE INJECTION OF LIMESTONE POWDER INTO FURNACE OF OIL FIRING BOILER (PART I).
12145 APTIC NO. 30131

REPORT FOR THE INVESTIGATION ON THE METHOD OF SO2 TEST.
12301 APTIC NO. 29381

ANALYZERS FOR MONITORING AIR QUALITY IN POLLUTION.
12272 APTIC NO. 29634

EXPERIENCES WITH FLUORINE EMISSION MEASUREMENTS.
12290 APTIC NO. 29737

DETERMINATION OF THE SOOT INDEX IN WASTE GASES OF OIL BURNERS.
12257 APTIC NO. 29749

DETERMINATION OF ORGANICALLY BOUND CARBON IN MOIST WASTE GASES.
12345 APTIC NO. 29839

PRODUCTION OF GASES OF KNOWN SPECIFIC ACTIVITY IN A REACTOR FOR CALIBRATING GASEOUS EFFLUENT MONITORS
12264 APTIC NO. 29848

DETERMINATION OF AROMATIC HYDROCARBONS EMITTED FROM THE DRY BATTERY PLANT.
12287 APTIC NO. 29862

DEVELOPMENT OF A METHOD FOR DETERMINING SULPHUR OXIDES IN FLUE GASES.
12265 APTIC NO. 30084

SOURCE SAMPLING OF ATMOSPHERIC CONTAMINANTS.
12248 APTIC NO. 30118

MERCURY IN THE AIR.
12362 APTIC NO. 29490

AIR POLLUTION.
12363 APTIC NO. 29510

TEN YEARS OF AIR POLLUTION IN HOKKAIDO.
12367 APTIC NO. 29727

A STUDY OF AIR POLLUTION AROUND A SULPHURIC ACID PLANT.
12374 APTIC NO. 29883

POLLUTIONS AND TOKYO METROPOLITAN GOVERNMENT.
12365 APTIC NO. 29973

PROBLEMS OF AIR POLLUTION AND MEASURES TO COMBAT IT IN EL PASO, TEXAS.
12368 APTIC NO. 30094

EVALUATION TRIALS OF URBAN AIR POLLUTION MODELS.
12439 APTIC NO. 29697

ATMOSPHERIC DISPERSION OF STACK EFFLUENTS.
12458 APTIC NO. 29773

ATMOSPHERIC REACTIONS AND SCAVENGING PROCESSES.
12426 APTIC NO. 29774

ESTIMATION OF GROUND LEVEL CONCENTRATION BY SMOKE-DIFFUSION WIND TUNNELS.
12462 APTIC NO. 29820

TURBULENT DIFFUSION THEORY TAKING TURBULENT BOUNDARY LAYER INTO CONSIDERATION.
12463 APTIC NO. 29822

THE EFFECT OF ATMOSPHERIC CONDITIONS ON PLUME RISE.
12455 APTIC NO. 29865

PROBLEMS OF FLUORINE EMISSION MEASUREMENTS.
12608 APTIC NO. 29736

COMPLEX ALKALI IRON SULFATES A CONTRIBUTION TO THE THERMODYNAMICS OF FIRESDIDE HIGH-TEMPERATURE CORROSION.
12616 APTIC NO. 29783

AN SO2 REMOVAL AND RECOVERY PROCESS.
12630 APTIC NO. 29144

INDUSTRIAL REACTION TO SULPHUR DIOXIDE CONTROL EQUIPMENT AND STANDARDS.
12637 APTIC NO. 29604

NOBODY BREATHES FRESH AIR. FACTS AND ARGUMENTS ABOUT AIR POLLUTION.
12677 APTIC NO. 29459

STACK SAMPLING

AIR POLLUTION TEST METHODS COMPARED IN INCINERATOR EVALUATION PROGRAM.
12119 APTIC NO. 29837

EXPERIENCES WITH FLUORINE EMISSION MEASUREMENTS.
12290 APTIC NO. 29737

PRODUCTION OF GASES OF KNOWN SPECIFIC ACTIVITY IN A REACTOR FOR CALIBRATING GASEOUS EFFLUENT MONITORS.
12264 APTIC NO. 29848

SOURCE SAMPLING OF ATMOSPHERIC CONTAMINANTS.
12248 APTIC NO. 30118

STACKS

HEAVY METAL POLLUTION IN THE ONAHAMA INDUSTRIAL AREA. 1ST REPORT. DISTRIBUTION OF HEAVY METALS IN SOIL.
12006 APTIC NO. 29539

PROBLEMS OF PUBLIC NUISANCE CAUSED BY BAD ODORS IN HYOGO PREFECTURE.
12029 APTIC NO. 29599

SELF-IGNITION OF GASEOUS FUELS THROUGH THE HEATING EFFECT OF A WAST GAS STREAM.
11998 APTIC NO. 29739

THE REMOTE HEATING PLANT IN RECKLINGHAUSEN--A CONTRIBUTION TO THE PROTECTION OF THE ENVIRONMENT.
11990 APTIC NO. 29914

THE EMISSION AND IMMISSION CONDITIONS OF THE POWER PLANTS IN THE BOEHLENER AREA.
12045 APTIC NO. 30072

PREVENTION OF AIR POLLUTION ON IRON FOUNDRY.
12178 APTIC NO. 29602

PULSED EMISSION CHIMNEY.
12082 APTIC NO. 29626

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

DEVICE TO HOLD IN PLACE ATOMIZER NOZZLES OF A WASHER DEVICE FOR SULFUR OXIDE GAS CONTAINED IN COMBUSTION EXHAUST GAS FROM BOILER.
12138 APTIC NO. 29685

DEVELOPMENT OF A NEW DUST COLLECTOR.
12056 APTIC NO. 29686

BAGHOUSE OPERATION AT THE WHITING, INDIANA PLANT OF THE FEDERATED METALS DIVISION AMERICAN SMELTING AND REFINING COMPANY.
12107 APTIC NO. 29772

COMBUSTION PLANT FOR RUBBER-COATED EQUIPMENT, TANKS AND CABLES.
12191 APTIC NO. 29834

STUDY ON THE STRENGTH OF SUPER-HIGH ASSEMBLED MULTI-CYLINDER TYPE STACK.
12184 APTIC NO. 30093

AIR POLLUTION DERIVING FROM HEATING PLANTS AND INDUSTRIAL PROCESSES AND ITS CONTROL.
12229 APTIC NO. 30106

DETERMINATION OF POLYNUCLEAR AROMATICS IN SUSPENDED PARTICLES.
12393 APTIC NO. 29462

A STUDY OF AIR POLLUTION AROUND A SULPHURIC ACID PLANT.
12374 APTIC NO. 29883

POLLUTIONS AND TOKYO METROPOLITAN GOVERNMENT.
12365 APTIC NO. 29973

EVALUATION TRIALS OF URBAN AIR POLLUTION MODELS.
12439 APTIC NO. 29697

ATMOSPHERIC DISPERSION OF STACK EFFLUENTS.
12458 APTIC NO. 29773

AIR POLLUTION CONTROL SYSTEM (3).
12401 APTIC NO. 29795

EXPERIENCE WITH INDUSTRIAL MULTI-FLUE CHIMNEYS OF 100-200 IN HEIGHT.
12473 APTIC NO. 29890

INDUSTRIAL REACTION TO SULPHUR DIOXIDE CONTROL EQUIPMENT AND STANDARDS.
12637 APTIC NO. 29604

STANDARDS OF AIR POLLUTION.
12643 APTIC NO. 29776

THE PREVENTION OF POLLUTION. PART II-POLLUTION AND THE LAW.
12658 APTIC NO. 29474

COLLECTION OF LEGISLATIONS RELATED WITH MITI CONCERNING POLLUTIONS.
12646 APTIC NO. 29504

PRESENT SITUATION OF ADMINISTRATION CONCERNING POLLUTIONS.
12648 APTIC NO. 29598

POLLUTIONS PREVENTION PLAN FOR CHIBA AND ICHIHARA CITIES IN CHIBA PREFECTURE.
12650 APTIC NO. 29813

COMPARATIVE STUDY OF CERTAIN PROVISIONS IN MEMBER STATES FOR CONTROLLING AIR POLLUTION.
12656 APTIC NO. 30052

NOBODY BREATHES FRESH AIR. FACTS AND ARGUMENTS ABOUT AIR POLLUTION.
12677 APTIC NO. 29459

STATE GOVERNMENTS

THE ECONOMIC IMPORTANCE OF POLLUTION CONTROL.
12626 APTIC NO. 30054

FEDERALISM MAKES ENVIRONMENTAL PROTECTION DIFFICULT.
12654 APTIC NO. 29969

THE EVOLUTION OF AIR POLLUTION CONTROL LAWS.
12672 APTIC NO. 30020

STATISTICAL ANALYSES

NOMOGRAPH GIVES NO OXIDATION.
11993 APTIC NO. 27535

A NATIONAL ESTIMATE OF PUBLIC AND INDUSTRIAL HEAT REJECTION REQUIREMENTS BY DECADES THROUGH THE YEAR 2000 AD.
12018 APTIC NO. 29272

ON DISPOSAL OF PLASTIC WASTES (PVC) BY FLUID LAYER OF MEDIUM.
12074 APTIC NO. 29449

A FINDING CONCERNING A BASIC INVESTIGATION METHOD ON ODOR POLLUTION SEEN FROM ACTUAL EXPERIENCE. REPORT NO. 2 ON THE STUDIES OF OBNOXIOUS ODOR.
12294 APTIC NO. 29508

ESTIMATION OF VARIANCE OF AIR SAMPLER DATA BASED ON REPLICATE SAMPLES.
12314 APTIC NO. 29642

A STUDY ON THE ESTIMATION OF THE REGIONAL CENTRAL VALUE OF AIR POLLUTION FROM OBSERVED VALUES.
12383 APTIC NO. 29518

STATISTICAL ANALYSES OF AIR POLLUTION SAMPLING FREQUENCY IN AN EPIDEMIOLOGIC STUDY.
12378 APTIC NO. 29655

SUSPENDED PARTICULATES IN OSAKA CITY.
12375 APTIC NO. 29853

POSSIBLE CORRELATION BETWEEN ATMOSPHERIC OZONE CONTENT AND COSMIC RAY INTENSITY VARIATIONS.
12369 APTIC NO. 30031

THE TENDENCY OF AIR POLLUTION AT NAGOYA CITY OBSERVED FROM THE WEIGHT OF FALLING DUST.
12396 APTIC NO. 30076

CHART FOR EVALUATION OF THE RISK OF SILICOSIS.
12542 APTIC NO. 29559

STUDIES ON THE INFLUENCE OF AIR POLLUTION ON THE HEALTH OF THE PEOPLE AT BELOSLAV, DISTRICT OF VARNA, PEOPLE S REPUBLIC OF BULGARIA.
12557 APTIC NO. 29573

ON THE RELATIONSHIP BETWEEN AIR POLLUTION AND MORBIDITY AND MORTALITY OF THE POPULATION IN POLISH TOWNS.
12563 APTIC NO. 29575

CANCER MORTALITY IN RELATION TO NATIONAL CONSUMPTION OF CIGARETTES, SOLID FUEL, TEA AND COFFEE.
12585 APTIC NO. 29608

SIGNAL PROCESSING TECHNIQUES FOR ESTIMATING PARAMETERS OF CERTAIN BIOLOGICAL MODELS.
12570 APTIC NO. 29997

CARBON MONOXIDE AND SURVIVAL FROM MYOCARDIAL INFARCTION.
12541 APTIC NO. 30127

CHANGES IN AIRWAYS CONDUCTANCE ON SMOKING A CIGARETTE.
12540 APTIC NO. 30135

RELATION BETWEEN INDUSTRIALIZATION AND THE DISTRIBUTION AND GROWTH OF EPIPHYTIC LICHENS AND MOSSES IN MONTREAL.
12602 APTIC NO. 29998

STEAM

EXHAUST GAS CLEANER FOR DIESEL ENGINES.
12221 APTIC NO. 29533

CO BOILER OF FLUIDIZED BED TYPE CATALYTIC CRACKING PROCESS PRODUCIN NO LEAD GASOLINE.
12237 APTIC NO 29535

STEAM-SMOKE MIST CONTACT DEVICE.
12174 APTIC NO. 29792

ELIMINATION OF OXIDES CONTAINED IN CERTAIN RESIDUAL INDUSTRIAL GASES.
12129 APTIC NO. 30043

THE ECONOMIC IMPORTANCE OF HEAT RECOVERY FROM HOUSEHOLD REFUSE INCINERATORS.
12625 APTIC NO. 29992

STEAM ENGINES

COUNTERMEASURES ON AUTOMOBILE EXHAUST GAS.
12050 APTIC NO. 29935

A REPORT OF THE PERIODIC MEASUREMENT OF SOOT AND DUST, AND SULFUR OXIDES IN THE AIR AROUND THE HOSPITAL.
12381 APTIC NO. 29794

STEAM PLANTS

THE INFLUENCE OF ENVIRONMENTAL PROTECTION ON PLANNING, OPERATION AND ECONOMY OF STEAM POWER PLANTS. I. MAINTENANCE OF CLEAN AIR.
12036 APTIC NO. 29519

AIR POLLUTION DERIVING FROM HEATING PLANTS AND INDUSTRIAL PROCESSES AND ITS CONTROL.
12229 APTIC NO. 30106

MERCURY IN THE AIR.
12362 APTIC NO. 29490

BENZPYRENE AND OTHER AROMATIC HYDROCARBONS IN THE DUST OF POLISH TOWNS.
12385 APTIC NO. 29569

ON HYGIENIC AND TOXICOLOGICAL PROBLEMS OF POLLUTION BY ARSENIC.
12534 APTIC NO. 29587

AN SO_2 REMOVAL AND RECOVERY PROCESS.
12630 APTIC NO. 29144

PRESENT SITUATION OF ADMINISTRATION CONCERNING POLLUTIONS.
12648 APTIC NO. 29598

STEEL

DUST COLLECTOR FOR ELECTRIC FURNACE MANUFACTURING FERROALLOY.
12123 APTIC NO. 29481

PREVENTION OF AIR POLLUTION ON IRON FOUNDRY.
12178 APTIC NO. 29602

AN EXPERIMENT ON VALVE RECESSION BY NON-LEADED GASOLINE.
12222 APTIC NO. 29656

DEVELOPMENT OF GAS PURIFICATION INSTALLATIONS FOR ELECTRIC MELTING FURNACES.
12204 APTIC NO. 29740

ACID MIST PRECIPITATOR MADE OF TEFLON FIBER.
12061 APTIC NO. 29833

REMOVAL OF BROWN FUME FROM WASTE GASES OF OPEN HEARTH FURNACE OXYGEN STEELMAKING PROCESS.
12194 APTIC NO. 29945

AIR FILTRATION SYSTEM FOR ELECTRIC FURNACE SWITCH GEAR AT LUKENS STEEL.
12065 APTIC NO. 30018

A PHOTOGRAPHIC METHOD OF DETERMINING THE EMISSION OF DUST GENERATED BY INDUSTRIAL MACHINERY.
12254 APTIC NO. 29544

AI[illegible] POLLUTION.
123[illegible] APTIC NO. 29510

P[illegible]IONS AND TOKYO ME[illegible]LITAN GOVERNMENT.
1236[illegible] APTIC NO. 29973

DISSIPATION AND PRECIPITATION OF DUST EMITTED BY A STEELWORKS.
12466 APTIC NO. 29829

DISSIPATION OF SO2 GENERATED IN A STEELWORK INTO THE GROUND LAYER OF THE ATMOSPHERE.
12467 APTIC NO. 29867

EXPERIENCE WITH INDUSTRIAL MULTI-FLUE CHIMNEYS OF 100-200 IN HEIGHT.
12473 APTIC NO. 29890

CORROSION RATES OF MILD STEEL IN COASTAL, INDUSTRIAL, AND INLAND AREAS OF NORTHERN CALIFORNIA.
12620 APTIC NO. 28810

AIR POLLUTION AND ATMOSPHERIC CORROSION.
12613 APTIC NO. 29222

THE MECHANISM OF ATMOSPHERIC RUSTING AND THE EFFECT OF CU AND P ON THE RUST FORMATION OF LOW ALLOY STEELS.
12615 APTIC NO. 29631

EFFECT OF LOW SILICIUM CONTENT AND SOME SURFACE TREATMENT ON THE OXIDATION OF CARBON STEELS IN CARBON DIOXIDE ATMOSPHERES AT MEDIUM TEMPERATURES.
12611 APTIC NO. 29995

THE COSTS FOR MAINTENANCE OF CLEAN AIR. THE INFLUENCE OF SOCIAL COSTS ON THE SELECTION OF AN INDUSTRIAL SITE.
12633 APTIC NO. 29923

PRESENT SITUATION OF ADMINISTRATION CONCERNING POLLUTIONS.
12648 APTIC NO. 29598

POLLUTIONS PREVENTION PLAN FOR CHIBA AND ICHIHARA CITIES IN CHIBA PREFECTURE.
12650 APTIC NO. 29813

STOMACH

PATHOLOGICAL STUDY ON THE EXPERIMENTAL RABBITS AT AIR-POLLUTED AREA IN YOKKAICHI.
12590 APTIC NO. 29502

STONE

MEASURES TAKEN BY THE REGIONAL SOCIAL SECURITY ADMINISTRATION OF LIMOGES TO REDUCE THE RISKS OF SILICOSIS.
12171 APTIC NO. 29561

DETERMINATION OF A DOCTRINE FOR VALID SAMPLING.
12273 APTIC NO. 29560

STORAGE BATTERIES

BUS AND VEHICLE FOR TRANSPORTATION WITH ELECTRIC DRIVE.
11987 APTIC NO. 29517

EXPERIMENTS WITH ELECTRIC VEHICLES.
11989 APTIC NO. 29886

STREETS

TREATMENT OF MUNICIPAL TRASH BY SANITATION TRUCK.
12049 APTIC NO. 29979

REPORT ON LEAD POLLUTION SURVEY.
12361 APTIC NO. 29465

LEAD POLLUTION AND PHOTOCHEMICAL SMOG IN TOKYO.
12376 APTIC NO. 29647

LEAD CONCENTRATION IN YOKOHAMA AIR.
12399 APTIC NO. 29814

DISTRIBUTION OF LEAD IN THE AIR NEAR CITY ROADS.
12388 APTIC NO. 29918

POLLUTIONS AND TOKYO METROPOLITAN GOVERNMENT.
12365 APTIC NO. 29973

SEASONAL VARIATION OF THE CONCENTRATION OF HEAVY METALS IN SUSPENDED DUST ON THE MAIN STREETS.
12384 APTIC NO. 30025

ON THE DIFFUSION OF AUTO-EXHAUSTED GASES.
12464 APTIC NO. 29850

ON PLUMBIC POLLUTION OF MUNICIPAL ATMOSPHERE--BEHAVIORS OF PLUMBIC COMPOUND AS AEROSOL.
12431 APTIC NO. 30073

EFFECTS OF ATMOSPHERIC LEAD ON TRAFFIC POLICEMEN IN A MEDIUM SIZED CITY.
12566 APTIC NO. 29958

ADDITION OF LEAD TO FUEL - HARMFUL OR DANGEROUS? (Bleizusaetze im Kraftstoff - harmlos oder gefaehrlich)? Text in German. VDI (Ver. Deut. Ingr.) Nachr. (Berlin), 25(9):6, 1971.
12527 APTIC NO. 30000

PRESENT SITUATION OF ADMINISTRATION CONCERNING POLLUTIONS.
12648 APTIC NO. 29598

POPULATION PLANTS TREES: ENVIRONMENTAL PROTECTION IN JAPAN.
12652 APTIC NO. 29859

STUDENTS

INTRODUCTION AND GENERAL DESCRIPTION OF THE STUDY AND OF THE PROCEDURES FOR PROLONGED EXPOSURE TO CARBON MONOXIDE AND HYPOXIA.
12530 APTIC NO. 29503

THE RESEARCH FOR THE EFFECTS OF AIR POLLUTION ON THE HUMAN BODY. (II) THE RELATIONSHIP BETWEEN ASTHMA-LIKE DISEASES OF THE SCHOOL CHILDREN AND AIR POLLUTION IN KITAKYUSHU.
12524 APTIC NO. 29683

EFFECTS OF SOOT AND SMOKE ON THE HEALTH OF SCHOOL CHILDREN.
12556 APTIC NO. 29791

THE ENVIRONMENTAL CRISIS: THROUGH A GLASS DARKLY.
12674 APTIC NO. 29619

STYRENES

THE REACTION OF OZONE WITH SOLID POLYSTYRENE.
12505 APTIC NO. 29666

SULFATES

METHOD TO REMOVE HARMFUL SUBSTANCES FROM STACK GAS BY-PRODUCING AMMONIUM SULFATE AND OTHERS (XV) - ACTIVATION ENERGY OF ACTIVATED CARBON FOR SO2 ADSORPTION.
12161 APTIC NO. 29648

MANUFACTURING OF INDUSTRIAL CATALYST COMPRISING ALUMINA AS CARRIER. (Arumina o tantai to shita kogyo shokubai no seizo). Text in Japanese. Preprint, Japan Industrial Technology Assoc., Tokyo, 12p., 1970. 5 refs. (Presented at the Industrial Catalyst Seminar Tokyo, Japan, Nov. 9, 1970.)
12158 APTIC NO. 29755

ELIMINATION OF OXIDES CONTAINED IN CERTAIN RESIDUAL INDUSTRIAL GASES.
12129 APTIC NO. 30043

SULFURIC ACID, SO2 DEVELOPMENTS: REMOVING SO2 AND ACID MIST WITH VENTURI SCRUBBERS.
12209 APTIC NO. 30080

A COMPREHENSIVE SAMPLING SYSTEM FOR STUDYING THE RELATION BETWEEN VISIBILITY, METEOROLOGICAL PARAMETERS AND ATMOSPHERIC POLLUTION.
12276 APTIC NO. 30082

CORRECTION: DETERMINATION OF HYDROGEN SULFIDE, SULFUR DIOXIDE, CARBONYL SULFIDE, CARBON DISULFIDE, AND CARBON DIOXIDE IN A GAS MIXTURE.
12341 APTIC NO. 30120

SUSPENDED PARTICULATES IN OSAKA CITY.
12375 APTIC NO. 29853

BORDEAUX. STUDY OF ATMOSPHERIC POLLUTION IN THE BUILT-UP AREA.
12420 APTIC NO. 30109

REDUCTION OF MAGNESIUM SULPHATE BY CARBON MONOXIDE.
12498 APTIC NO. 29943

COMPLEX ALKALI IRON SULFATES A CONTRIBUTION TO THE THERMODYNAMICS OF FIRESDIDE HIGH-TEMPERATURE CORROSION.
12616 APTIC NO. 29783

SULFHYDRYL COMPOUNDS

MERCURY IN MAN.
12011 APTIC NO. 29643

SULFIDES

PROBLEMS OF PUBLIC NUISANCE CAUSED BY BAD ODORS IN HYOGO PREFECTURE.
12029 APTIC NO. 29599

AMMONIA DISPOSAL--COKE PLANTS.
12012 APTIC NO. 29627

INVESTIGATION OF HEAVY METAL POLLUTION IN IWAKI CITY.
12007 APTIC NO. 29787

PROCESS FOR THE SEPARATION OF SULFUR FROM GAS.
12052 APTIC NO. 29273

OXIDATION OF SODIUM SULFIDE AND MERCAPTIDE IN BLACK LIQUOR.
12071 APTIC NO. 29278

DESULFURIZATION OF LIQUEFIED PROPANE GAS. MOLECULAR SIEVE PROCESS.
12053 APTIC NO. 29617

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

SEPARATION OF CO2 AND H2S FROM GAS MIXTURES.
12086 APTIC NO. 29752

HYDRODESULFURIZATION OF HEAVY QUALITY OIL, RESIDUAL OIL, ETC.. (Jushitsuyu, zansayu to no suisokadatsuryuho). Text in Japanese. (Ishikawajima-Harima Heavy Industries (Japan)) Japan. Pat. Sho 46-819. 3p., Jan. 9, 1971. (Appl. Dec. 25, 1967, claims not given).
12218 APTIC NO. 29933

THE EFFECT OF CATALYST POISONS ON THE ACTIVITY OF CARBON MONOXIDE SHIFT CATALYSTS.
12212 APTIC NO. 29944

HIGH-CONCENTRATION SULFUR DIOXIDE FROM CALCINING PYRITES IN THE DKSM FURNACE.
12157 APTIC NO. 29982

KINETICS OF RECOVERING SULFUR FROM THE SPENT SEED IN AN MHD POWER PLANT.
12118 APTIC NO. 30048

PROCESS FOR REMOVING SULPHUR FROM GASES.
12139 APTIC NO. 30049

PULPERS APPLY ODOR CONTROL.
12104 APTIC NO. 30062

REDUCING SO2 EMISSION FROM STATIONARY SOURCES.
12098 APTIC NO. 30102

LOSS OF MERCURY FROM CHLORALKALI PLANTS.
12120 APTIC NO. 30117

THE MEASUREMENT OF ATMOSPHERIC POLLUTION IN GERMANY.
12340 APTIC NO. 29066

ON THE EFFECT OF ACCOMPANYING GASES IN QUANTITATIVE ANALYSIS OF HYDROGEN SULFIDE USING METHYLENE BLUE.
12343 APTIC NO. 29505

PARTICLE SIZE MEASURING WITH THE TELEVISION MICROSCOPE QUANTIMET FOR SIZES MINUS 4 MICRONS.
12304 APTIC NO. 29512

A GAS ANALYSER FOR THE MEASUREMENT OF IMPURITIES IN AIR.
12277 APTIC NO. 29581

ANALYZERS FOR MONITORING AIR QUALITY IN POLLUTION.
12272 APTIC NO. 29634

ON MEASUREMENT OF ODOR.
12256 APTIC NO. 29726

SIMPLIFIED TECHNIQUES IN AIR POLLUTION MEASUREMENT.
12289 APTIC NO. 29771

ENVIRONMENTAL POLLUTION AND ITS MEASUREMENTS (II).
12338 APTIC NO. 29843

A SIMPLE TECHNIQUE FOR MEASURING MEAN H2S CONCENTRATION.
12275 APTIC NO. 29844

AUTOMATED ANALYSIS SYSTEMS MAKES KRAFT EMISSION MEASUREMENTS EASY.
12325 APTIC NO. 29913

FILTER METHOD FOR THE MEASUREMENT OF ATMOSPHERIC HYDROGEN SULFIDE.
12330 APTIC NO. 30004

GAS CHROMATOGRAPHY OF REACTIVE SULFUR GASES IN AIR AT THE PARTS- PER-BILLION LEVEL.
12347 APTIC NO. 30065

CORRECTION: DETERMINATION OF HYDROGEN SULFIDE, SULFUR DIOXIDE, CARBONYL SULFIDE, CARBON DISULFIDE, AND CARBON DIOXIDE IN A GAS MIXTURE.
12341 APTIC NO. 30120

ATMOSPHERIC REACTIONS AND SCAVENGING PROCESSES.
12426 APTIC NO. 29774

A FEW OBSERVATION ON THE GENERATION MECHANISM OF OBNOXIOUS ODOR.
12517 APTIC NO. 29649

METHANESULFENYL CHLORIDE. V. THE SPONTANEOUS DECOMPOSITION OF METHANESULFENYL CHLORIDE AND METHYLSULFUR TRICHLORIDE.
12485 APTIC NO. 29674

THE STUDY OF THE REACTION OF HYDROGEN SULPHIDE WITH ATOMIC OXYGEN USING EMISSION SPECTRUM.
12516 APTIC NO. 29884

SIMULTANEOUS ABSORPTION OF TWO GASES ACCOMPANIED BY REVERSIBLE INSTANTANEOUS CHEMICAL REACTIONS.
12504 APTIC NO. 29917

SPECTROSCOPIC STUDIES OF PORPHYRINS, PHTHALOCYANINES, AND CS2 IN INERT MATRICES.
12471 APTIC NO. 30050

ITAI-ITAI (OUCH-OUCH) DISEASE AND CADMIUM POLLUTION IN JAPAN.
12581 APTIC NO. 29673

ON DAMAGE TO PLANTS BY FLUORIDES IN EXHAUST GAS FROM TILE MANUFACTURING FACTORY.
12606 APTIC NO. 29597

COMPLEX ALKALI IRON SULFATES A CONTRIBUTION TO THE THERMODYNAMICS OF FIRESDIDE HIGH-TEMPERATURE CORROSION.
12616 APTIC NO. 29783

ATMOSPHERIC CORROSION OF SILVER.
12614 APTIC NO. 29951

SULFUR RECOVERY IN THE MANUFACTURE OF PIPELINE GAS FROM COAL.
12635 APTIC NO. 29143

COLLECTION OF LEGISLATIONS RELATED WITH MITI CONCERNING POLLUTIONS.
12646 APTIC NO. 29504

MATERIALS FOR REFERENCE ABOUT ENVIRONMENTAL POLLUTION CONTROL.
12651 APTIC NO. 29818

SULFITES

SULFURIC ACID, SO2 DEVELOPMENTS: REMOVING SO2 AND ACID MIST WITH VENTURI SCRUBBERS.
12209 APTIC NO. 30080

SULFONIC ACID

COLLECTION OF LEGISLATIONS RELATED WITH MITI CONCERNING POLLUTIONS.
12646 APTIC NO. 29504

SULFUR COMPOUNDS

TODAY'S BASE OF EUROPEAN MINERAL OIL SUPPLY.
12004 APTIC NO. 28337

OIL REFINERS PREPARE FOR ANITPOLLUTION CONTROLS.
12040 APTIC NO. 29127

PROBLEMS OF PUBLIC NUISANCE CAUSED BY BAD ODORS IN HYOGO PREFECTURE.
12029 APTIC NO. 29599

AMMONIA DISPOSAL--COKE PLANTS.
12012 APTIC NO. 29627

INVESTIGATION OF HEAVY METAL POLLUTION IN IWAKI CITY.
12007 APTIC NO. 29787

SOME PROBLEMS ON THE OFFENSIVE ODOR IN HYOGO PREFECTURE.
12030 APTIC NO. 29842

TWO NEW PROCESSES FOR RECOVERY OF SULPHUR OXIDES FROM SMELTER GASES.
12207 APTIC NO. 29200

PROCESS FOR THE SEPARATION OF SULFUR FROM GAS.
12052 APTIC NO. 29273

OXIDATION OF SODIUM SULFIDE AND MERCAPTIDE IN BLACK LIQUOR.
12071 APTIC NO. 29278

DESULFURIZATION OF LIQUEFIED PROPANE GAS. MOLECULAR SIEVE PROCESS.
12053 APTIC NO. 29617

FEASIBILITY STUDY OF NEW SULFUR OXIDE CONTROL PROCESSES FOR APPLICATION TO SMELTERS AND POWER PLANTS. PART IV: THE WELLMAN-LORD SO2 RECOVERY PROCESS FOR APPLICATION TO POWER PLANT FLUE GASES. (FINAL REPORT).
12208 APTIC NO. 29641

METHOD TO REMOVE HARMFUL SUBSTANCES FROM STACK GAS BY-PRODUCING AMMONIUM SULFATE AND OTHERS (XV) - ACTIVATION ENERGY OF ACTIVATED CARBON FOR SO2 ADSORPTION.
12161 APTIC NO. 29648

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

SEPARATION OF CO2 AND H2S FROM GAS MIXTURES.
12086 APTIC NO. 29752

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12158 APTIC NO. 29755

NEW PROCESS OFFERS 99.9% SULPHUR RECOVERY.
12062 APTIC NO. 29855

SELECTION OF FILTRATION EQUIPMENT FOR SULPHUR AND POTASH PROCESSING.
12160 APTIC NO. 29902

INVESTIGATION OF HEAVY OIL DESULFURIZATION IN FIXED-BED CONTACT REACTORS.
12196 APTIC NO. 29931

CONTACT HYDRODESULFURIZATION OF PETROLEUM RESIDUAL OIL.
12200 APTIC NO. 29932

HYDRODESULFURIZATION OF HEAVY QUALITY OIL, RESIDUAL OIL, ETC.. (Jushitsuyu, zansayu to no suisokadatsuryuho). Text in Japanese. (Ishikawajima-Harima Heavy Industries (Japan)) Japan. Pat. Sho 46-819. 3p., Jan. 9, 1971. (Appl. Dec. 25, 1967, claims not given).
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THE EFFECT OF CATALYST POISONS ON THE ACTIVITY OF CARBON MONOXIDE SHIFT CATALYSTS.
12212 APTIC NO. 29944

HIGH-CONCENTRATION SULFUR DIOXIDE FROM CALCINING PYRITES IN THE DKSM FURNACE.
12157 APTIC NO. 29982

REACTOR DEVICE FOR HEAVY OIL DESULFURIZATION.
12149 APTIC NO. 29987

ELIMINATION OF OXIDES CONTAINED IN CERTAIN RESIDUAL INDUSTRIAL GASES.
12129 APTIC NO. 30043

KINETICS OF RECOVERING SULFUR FROM THE SPENT SEED IN AN MHD POWER PLANT.
12118 APTIC NO. 30048

PROCESS FOR REMOVING SULPHUR FROM GASES.
12139 APTIC NO. 30049

PULPERS APPLY ODOR CONTROL.
12104 APTIC NO. 30062

SULFURIC ACID, SO2 DEVELOPMENTS: REMOVING SO2 AND ACID MIST WITH VENTURI SCRUBBERS.
12209 APTIC NO. 30080

REDUCING SO2 EMISSION FROM STATIONARY SOURCES.
12098 APTIC NO. 30102

LOSS OF MERCURY FROM CHLORALKALI PLANTS.
12120 APTIC NO. 30117

THE MEASUREMENT OF ATMOSPHERIC POLLUTION IN GERMANY.
12340 APTIC NO. 29066

ON THE EFFECT OF ACCOMPANYING GASES IN QUANTITATIVE ANALYSIS OF HYDROGEN SULFIDE USING METHYLENE BLUE.
12343 APTIC NO. 29505

PARTICLE SIZE MEASURING WITH THE TELEVISION MICROSCOPE QUANTIMET FOR SIZES MINUS 4 MICRONS.
12304 APTIC NO. 29512

A GAS ANALYSER FOR THE MEASUREMENT OF IMPURITIES IN AIR.
12277 APTIC NO. 29501

ANALYZERS FOR MONITORING AIR QUALITY IN POLLUTION.
12272 APTIC NO. 29634

ON MEASUREMENT OF ODOR.
12256 APTIC NO. 29726

SIMPLIFIED TECHNIQUES IN AIR POLLUTION MEASUREMENT.
12289 APTIC NO. 29771

ENVIRONMENTAL POLLUTION AND ITS MEASUREMENTS (II).
12338 APTIC NO. 29843

A SIMPLE TECHNIQUE FOR MEASURING MEAN H2S CONCENTRATION.
12275 APTIC NO. 29844

AIR POLLUTION.
12324 APTIC NO. 29858

FLAME PHOTOMETRIC DETECTION OF VOLATILE SULPHUR COMPOUNDS IN SMOKE FROM VARIOUS TYPES OF CIGARETTES.
12283 APTIC NO. 29874

AUTOMATED ANALYSIS SYSTEMS MAKES KRAFT EMISSION MEASUREMENTS EASY.
12325 APTIC NO. 29913

FILTER METHOD FOR THE MEASUREMENT OF ATMOSPHERIC HYDROGEN SULFIDE.
12330 APTIC NO. 30004

A METER FOR THE SITE DETERMINATION OF HYDROLYSABLE FLUORIDES IN SULPHUR HEXAFLUORIDE.
12336 APTIC NO. 30007

GAS CHROMATOGRAPHY OF REACTIVE SULFUR GASES IN AIR AT THE PARTS- PER-BILLION LEVEL.
12347 APTIC NO. 30065

A COMPREHENSIVE SAMPLING SYSTEM FOR STUDYING THE RELATION BETWEEN VISIBILITY, METEOROLOGICAL PARAMETERS AND ATMOSPHERIC POLLUTION.
12276 APTIC NO. 30082

CORRECTION: DETERMINATION OF HYDROGEN SULFIDE, SULFUR DIOXIDE, CARBONYL SULFIDE, CARBON DISULFIDE, AND CARBON DIOXIDE IN A GAS MIXTURE.
12341 APTIC NO. 30120

THE GAS CHROMATOGRAPHIC DETERMINATION OF PESTICIDES. (PART 3) DETERMINATION OF RESIDUES OF ORGANOPHOSPHORUS PESTICIDES.
12349 APTIC NO. 30134

SUSPENDED PARTICULATES IN OSAKA CITY.
12375 APTIC NO. 29853

ATMOSPHERIC REACTIONS AND SCAVENGING PROCESSES.
12426 APTIC NO. 29774

BORDEAUX. STUDY OF ATMOSPHERIC POLLUTION IN THE BUILT-UP AREA.
12420 APTIC NO. 30109

A FEW OBSERVATION ON THE GENERATION MECHANISM OF OBNOXIOUS ODOR.
12517 APTIC NO. 29649

METHANESULFENYL CHLORIDE. V. THE SPONTANEOUS DECOMPOSITION OF METHANESULFENYL CHLORIDE AND METHYLSULFUR TRICHLORIDE.
12485 APTIC NO. 29674

THE STUDY OF THE REACTION OF HYDROGEN SULPHIDE WITH ATOMIC OXYGEN USING EMISSION SPECTRUM.
12516 APTIC NO. 29884

SIMULTANEOUS ABSORPTION OF TWO GASES ACCOMPANIED BY REVERSIBLE INSTANTANEOUS CHEMICAL REACTIONS.
12504 APTIC NO. 29917

REDUCTION OF MAGNESIUM SULPHATE BY CARBON MONOXIDE.
12498 APTIC NO. 29943

SPECTROSCOPIC STUDIES OF PORPHYRINS, PHTHALOCYANINES, AND CS2 IN INERT MATRICES.
12471 APTIC NO. 30050

ITAI-ITAI (OUCH-OUCH) DISEASE AND CADMIUM POLLUTION IN JAPAN.
12581 APTIC NO. 29673

ON DAMAGE TO PLANTS BY FLUORIDES IN EXHAUST GAS FROM TILE MANUFACTURING FACTORY.
12606 APTIC NO. 29597

COMPLEX ALKALI IRON SULFATES A CONTRIBUTION TO THE THERMODYNAMICS OF FIRESDIDE HIGH-TEMPERATURE CORROSION.
12616 APTIC NO. 29783

ATMOSPHERIC CORROSION OF SILVER.
12614 APTIC NO. 29951

PROBLEMS IN INDUSTRIAL POWER PLANTS.
12618 APTIC NO. 29956

SULFUR RECOVERY IN THE MANUFACTURE OF PIPELINE GAS FROM COAL.
12635 APTIC NO. 29143

THE COSTS FOR MAINTENANCE OF CLEAN AIR. THE INFLUENCE OF SOCIAL COSTS ON THE SELECTION OF AN INDUSTRIAL SITE.
12633 APTIC NO. 29923

VALUE ANALYSIS OF COAL.
12629 APTIC NO. 30122

COLLECTION OF LEGISLATIONS RELATED WITH MITI CONCERNING POLLUTIONS.
12646 APTIC NO. 29504

MATERIALS FOR REFERENCE ABOUT ENVIRONMENTAL POLLUTION CONTROL.
12651 APTIC NO. 29818

SULFUR DIOXIDE

OIL REFINERS PREPARE FOR ANIT-POLLUTION CONTROLS.
12040 APTIC NO. 29127

THE INFLUENCE OF ENVIRONMENTAL PROTECTION ON PLANNING, OPERATION AND ECONOMY OF STEAM POWER PLANTS. I. MAINTENANCE OF CLEAN AIR.
12036 APTIC NO. 29519

AIR POLLUTANTS GENERATED IN INTRA-FURNACE COMBUSTION.
12020 APTIC NO. 29532

AIR POLLUTION BY NITRIC OXIDE FROM FERTILIZER FACTORIES.
12051 APTIC NO. 29568

PHYSICAL-CHEMICAL PROBLEMS OF AIR POLLUTION.
11996 APTIC NO. 29786

INVESTIGATION OF HEAVY METAL POLLUTION IN IWAKI CITY.
12007 APTIC NO. 29787

COUNTERMEASURES ON AUTOMOBILE EXHAUST GAS.
12050 APTIC NO. 29935

THE EMISSION AND IMMISSION CONDITIONS OF THE POWER PLANTS IN THE BOEHLENER AREA.
12045 APTIC NO. 30072

PROCESS FOR THE SEPARATION OF SULFUR FROM GAS.
12052 APTIC NO. 29273

DUST COLLECTOR FOR ELECTRIC FURNACE MANUFACTURING FERROALLOY.
12123 APTIC NO. 29481

THE NEW PLANT FOR PRODUCTION OF SULFUR DIOXIDE AT LEVERKUSEN.
12203 APTIC NO. 29577

ENVIRONMENTAL POLLUTION CONTROL MEASURES IN WEST EUROPE AND PROBLEMS OF CARBIDE ELECTRIC FURNACE DUST IN JAPAN.
12073 APTIC NO. 29675

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

ELECTRIC DUST COLLECTION DEVICE.
12151 APTIC NO. 29819

EQUALIZATION OF PARTICLE TRANSFER IN TRANSFERABLE STRATUM.
12144 APTIC NO. 29928

HIGH-CONCENTRATION SULFUR DIOXIDE FROM CALCINING PYRITES IN THE DKSM FURNACE.
12157 APTIC NO. 29982

GAS ADSORPTION BY VOLCANIC ASH.
12197 APTIC NO. 30030

SULFURIC ACID, SO2 DEVELOPMENTS: REMOVING SO2 AND ACID MIST WITH VENTURI SCRUBBERS.
12209 APTIC NO. 30080

PLANTS AND POLLUTED AIR.
12230 APTIC NO. 30083

ON A DUST-COLLECTING DEVICE FOR A FERROSILICON FURNACE.
12219 APTIC NO. 30086

AIR POLLUTION DERIVING FROM HEATING PLANTS AND INDUSTRIAL PROCESSES AND ITS CONTROL.
12229 APTIC NO. 30106

LEAD SMELTING PLANT CONTROLS AIR EMISSIONS.
12069 APTIC NO. 30124

REPORT FOR THE INVESTIGATION ON THE METHOD OF SO2 TEST.
12301 APTIC NO. 29381

INVESTIGATION ON THE MEASURING ERRORS OF CONDUCTOMETRIC SULFUR DIOXIDE ANALYZER USED FOR AIR POLLUTION MONITOR.
12356 APTIC NO. 29398

A MEASUREMENT GRID FOR AIR POLLUTION IN THE MOUTH OF THE RIVER RHINE IN ROTTERDAM.
12333 APTIC NO. 29460

MEASUREMENT OF GAS CONCENTRATION UTILIZING LIGHT SCATTERING BY PARTICULATES.
12352 APTIC NO. 29461

ON THE EFFECT OF ACCOMPANYING GASES IN QUANTITATIVE ANALYSIS OF HYDROGEN SULFIDE USING METHYLENE BLUE.
12343 APTIC NO. 29505

INFRARED RADIATION PROPERTIES OF SULFUR DIOXIDE.
12269 APTIC NO. 29521

A GAS ANALYSER FOR THE MEASUREMENT OF IMPURITIES IN AIR.
12277 APTIC NO. 29581

THE ADIABATIC FLASH PHOTOLYSIS OF NO2 AND SO2.
12259 APTIC NO. 29630

ANALYZERS FOR MONITORING AIR QUALITY IN POLLUTION.
12272 APTIC NO. 29634

SIMPLIFIED TECHNIQUES IN AIR POLLUTION MEASUREMENT.
12289 APTIC NO. 29771

METHODS OF DETERMINING SULFUR DIOXIDE (REVIEW).
12305 APTIC NO. 29801

ENVIRONMENTAL POLLUTION AND ITS MEASUREMENTS (II).
12338 APTIC NO. 2[illegible]43

PARTICLE SIZE DISTRIBUTION IN AEROSOLS FORMED FROM GASEOUS REACTANTS.
12268 APTIC NO. 29854

AUTOMATED ANALYSIS SYSTEMS MAKES KRAFT EMISSION MEASUREMENTS EASY.
12325 APTIC NO. 29913

EMISSION MONITORING WITH ACKNOWLEDGED MEASURING UNITS AND ANALYZERS.
12260 APTIC NO. 29955

DETERMINATION AND EVALUATION OF LOW CONCENTRATIONS OF INDUSTRIAL AIR POLLUTANTS.
12309 APTIC NO. 30014

GAS CHROMATOGRAPHY OF REACTIVE SULFUR GASES IN AIR AT THE PARTS- PER-BILLION LEVEL.
12347 APTIC NO. 30065

A COMPREHENSIVE SAMPLING SYSTEM FOR STUDYING THE RELATION BETWEEN VISIBILITY, METEOROLOGICAL PARAMETERS AND ATMOSPHERIC POLLUTION.
12276 APTIC NO. 30082

DEVELOPMENT OF A METHOD FOR DETERMINING SULPHUR OXIDES IN FLUE GASES.
12265 APTIC NO. 30084

CORRECTION: DETERMINATION OF HYDROGEN SULFIDE, SULFUR DIOXIDE, CARBONYL SULFIDE, CARBON DISULFIDE, AND CARBON DIOXIDE IN A GAS MIXTURE.
12341 APTIC NO. 30120

AIR POLLUTION BY SMOKE AND SO2.
12372 APTIC NO. 29289

AIR POLLUTION.
12363 APTIC NO. 29510

A BIOLOGICAL SCALE FOR THE ESTIMATION OF SULPHUR DIOXIDE POLLUTION.
12379 APTIC NO. 29522

AIR POLLUTION BY SMOKE AND SO2.
12373 APTIC NO. 29566

TEN YEARS OF AIR POLLUTION IN HOKKAIDO.
12367 APTIC NO. 29727

A REPORT OF THE PERIODIC MEASUREMENT OF SOOT AND DUST, AND SULFUR OXIDES IN THE AIR AROUND THE HOSPITAL.
12381 APTIC NO. 29794

REPORT FROM THE NETHERLANDS: MEASUREMENT GRID FOR AIR POLLUTION.
12364 APTIC NO. 29798

REGISTRATION OF THE SULPHUR DIOXIDE CONTENT OF THE AIR IN BUDAPEST.
12394 APTIC NO. 29868

A STUDY OF AIR POLLUTION AROUND A SULPHURIC ACID PLANT.
12374 APTIC NO. 29883

ON AIR POLLUTION IN MIZUSHIMA AREA.
12390 APTIC NO. 29895

CLEANER AIR IN LONDON.
12377 APTIC NO. 29912

POLLUTIONS AND TOKYO METROPOLITAN GOVERNMENT.
12365 APTIC NO. 29973

CONCASTER, AN AREA STUDY.
12366 APTIC NO. 30047

STUDIES ON AIR POLLUTION DUE TO AUTOMOBILE EXHAUST. REPORT 15: AIR POLLUTION AT THE VICINITY OF BOOTHS IN MEISHIN HIGHWAY.
12389 APTIC NO. 30075

EVOLUTION OF THE ATMOSPHERIC CONTAMINATION IN MADRID IN 1969.
12371 APTIC NO. 30089

INDOOR/OUTDOOR AIR QUALITY RELATIONSHIPS.
12398 APTIC NO. 30090

EXPERIMENT ON PHOTOCHEMICAL REACTION OF MOTOR EXHAUST GAS.
12469 APTIC NO. 29500

DISTRIBUTION OF POLLUTION AT SOME COUNTRY SITES.
12425 APTIC NO. 29582

NEW EYE ON THE AIR.
12412 APTIC NO. 29644

AN EXPERIMENTAL STUDY OF PHOTOCHEMICAL OXIDATION OF ORGANIC SUBSTANCES IN THE ATMOSPHERE.
12441 APTIC NO. 29681

EPISODE 104.
12410 APTIC NO. 29695

EVALUATION TRIALS OF URBAN AIR POLLUTION MODELS.
12439 APTIC NO. 29697

ATMOSPHERIC REACTIONS AND SCAVENGING PROCESSES.
12426 APTIC NO 29774

FORMATION OF PARTICLES BY PHOTOLYSIS AND RADIOLYSIS.
12407 APTIC NO. 29809

DISSIPATION OF SO2 GENERATED IN A STEELWORK INTO THE GROUND LAYER OF THE ATMOSPHERE.
12467 APTIC NO. 29867

A NUMERICAL EXPERIMENT IN SIMULATING THE TRANSPORT OF SULFUR DIOXIDE THROUGH THE ATMOSPHERE.
12446 APTIC NO. 29952

DISSOCIATIVE ELECTRON ATTACHMENT PROCESSES IN SO2 AND NO2.
12444 APTIC NO. 30008

AIR POLLUTION IN AN URBAN ENVIRONMENT.
12413 APTIC NO. 30045

ON PLUMBIC POLLUTION OF MUNICIPAL ATMOSPHERE--BEHAVIORS OF PLUMBIC COMPOUND AS AEROSOL.
12431 APTIC NO. 300[illegible]

KINETICS OF THE REACTION BETWEEN THE SOLID SODIUM CARBONATE AND THE GASEOUS SULPHUR DIOXIDE. VI. STATISTICAL MOLECULAR MODEL OF THE EXCESS KINETIC FUNCTION.
12487 APTIC NO. 29702

INSTRUMENT FOR STUDYING THE ACTION OF EXHAUST GASES DILUTED IN THE AIR, ON BACTERIAL, CELLULAR, AND TISSULAR CULTURES.
12476 APTIC NO. 29849

PHOTOCHEMICAL REACTION BETWEEN SO2 AND ORGANIC COMPOUNDS (II).
12514 APTIC NO. 29967

INTERNAL CONVERSION IN BENZENE, BENZENE-D6, AND SULFUR DIOXIDE.
12508 APTIC NO. 30063

ELECTRON ENERGY LOSS SPECTRA OF NO2 AND SO2.
12480 APTIC NO. 30079

PROGRESS REPORT. JANUARY-DECEMBER 1969.
12555 APTIC NO. 28850

EFFECTS OF ATMOSPHERIC FACTORS AND OF SO2 AND AIRBORNE DUST EMISSIONS ON INTRABRONCHIAL FLOW RESISTANCE AND INTRATHORACAL GAS VOLUME OF SOUND AND SICK MEN.
12571 APTIC NO. 29048

STUDIES OF THE SIGNIFICANCE OF DUSTS AND GASES FOR THE PATHOLOGY OF INFECTIONS OF THE RESPIRATORY TRACT.
12529 APTIC NO. 29571

ON THE RELATIONSHIP BETWEEN AIR POLLUTION AND MORBIDITY AND MORTALITY OF THE POPULATION IN POLISH TOWNS.
12563 APTIC NO. 29575

ON THE PROBLEM OF THE COMBINED EFFECTS OF SULFUR DIOXIDE AND BENZPYRENE ON THE ORGANISMS OF TEST ANIMALS.
12583 APTIC NO. 29585

EXPERIMENTAL STUDIES ON THE EFFECT OF SMALL DOSES OF LEAD AND SULFUR DIOXIDE.
12532 APTIC NO. 29588

SOME RECENT TOPICS IN AIR POLLUTION AND HEALTH IN LONDON.
12562 APTIC NO. 29882

STUDIES ON AIR POLLUTION AND BRONCHIAL ASTHMA. REPORT I.
12548 APTIC NO. 29925

AIR POLLUTION.
12575 APTIC NO. 29949

SOME HEALTH SURVEY RESULTS OF UNDERGROUND GARAGE WORKERS.
12568 APTIC NO. 30074

THE ROLE OF AIR POLLUTION ON CHRONIC OBSTRUCTIVE PULMONARY DISEASE.
12539 APTIC NO. 30136

FURTHER STUDIES ON THE EFFECT OF SULPHUR DIOXIDE ON LICHENS AND BRYOPHYTES.
12599 APTIC NO. 29645

ON COMPOSITE HARM TO PLANTS BY SULFUROUS ACID GAS AND OXIDANT
12604 APTIC NO. 29671

COLLECTED PHOTOGRAPHS DEMONSTRATING PLANT DAMAGE BY AIR POLLUTION.
12591 APTIC NO. 29924

STUDIES ON THE SMOKE DAMAGE OF TREES. (I) ON THE ACUTE DAMAGE SYMPTOMS BY THE SO2.
12607 APTIC NO. 29976

THE EFFECTS OF AIR POLLUTION ON VEGETATION.
12600 APTIC NO. 30003

AIR POLLUTION AND ATMOSPHERIC CORROSION.
12613 APTIC NO. 29222

COMPLEX ALKALI IRON SULFATES A CONTRIBUTION TO THE THERMODYNAMICS OF FIRESDIDE HIGH-TEMPERATURE CORROSION.
12616 APTIC NO. 29783

ATMOSPHERIC CORROSION OF SILVER.
12614 APTIC NO. 29951

A STUDY OF THE CONVERSION OF SO2 TO SO3.
12623 APTIC NO. 30022

ATMOSPHERIC CORROSION OF THE ELECTROLYTIC NI-CR COATINGS.
12609 APTIC NO. 30039

ATMOSPHERIC POLLUTANTS FRENCH LEGISLATION. STANDARD MEASURING METHODS. RECENT COMMERCIAL APPARATUS.
12638 APTIC NO. 29003

CONTINUOUS MEASUREMENT SYSTEM OF ATMOSPHERIC POLLUTION AT THE MOUTH OF THE RHINE, NEAR ROTTERDAM.
12645 APTIC NO. 28696

COLLECTION OF LEGISLATIONS RELATED WITH MITI CONCERNING POLLUTIONS.
12646 APTIC NO. 29504

ADDENDUM TO ENVIRONMENTAL POLLUTIONS IN KAWASAKI CITY.
12647 APTIC NO. 29511

PRESENT SITUATION OF ADMINISTRATION CONCERNING POLLUTIONS.
12648 APTIC NO. 29598

CHIBA PREFECTURAL ORDINANCE ON POLLUTIONS CONTROL AND ENFORCEMENT REGULATION OF ORDINANCE.
12649 APTIC NO. 29679

POLLUTIONS PREVENTION PLAN FOR CHIBA AND ICHIHARA CITIES IN CHIBA PREFECTURE.
12650 APTIC NO. 29813

SOME RECENT TOPICS IN AIR POLLUTION AND HEALTH IN NEW YORK.
12668 APTIC NO. 29817

MATERIALS FOR REFERENCE ABOUT ENVIRONMENTAL POLLUTION CONTROL.
12651 APTIC NO. 29818

TOKYO FIGHTS POLLUTION. AN URGENT APPEAL FOR REFORM
12653 APTIC NO. 29888

COMPARATIVE STUDY OF CERTAIN PROVISIONS IN MEMBER STATES FOR CONTROLLING AIR POLLUTION.
12656 APTIC NO. 30052

LONG RANGE PLANNING IN AIR RESOURCE MANAGEMENT
12657 APTIC NO. 30056

OUR ENVIRONMENT--OPTIONS ON THE WAY INTO THE FUTURE.
12675 APTIC NO. 29722

AIR POLLUTION--THE STATUS TODAY.
12681 APTIC NO. 28923

NOBODY BREATHES FRESH AIR. FACTS AND ARGUMENTS ABOUT AIR POLLUTION.
12677 APTIC NO. 29459

SULFUR OXIDES CONTROL

OIL REFINERS PREPARE FOR ANIT-POLLUTION CONTROLS.
12040 APTIC NO. 29127

COMBUSTION OF WASTE OIL FROM COAL.
12043 APTIC NO. 29534

BASIC RESEARCH ON SMOKE DESULFURIZATION BY LIME-METALS, 2ND REPORT - EFFECT OF METAL ADDITION ON CALCINATION OF LIME.
12153 APTIC NO. 29080

TWO NEW PROCESSES FOR RECOVERY OF SULPHUR OXIDES FROM SMELTER GASES.
12207 APTIC NO. 29200

PROCESS FOR THE SEPARATION OF SULFUR FROM GAS.
12052 APTIC NO. 29273

BASIC RESEARCH ON SMOKE DESULFURIZATION BY LIME-METALS, 1ST REPORT - DESULFURIZATION EFFECT BY ADDITION OF METAL.
12154 APTIC NO. 29478

STUDY ON MECHANISM OF REACTION WITH SULFUR DIOXIDE OF LIMESTONE POWDER BLOWN INTO COMBUSTION GAS.
12146 APTIC NO. 29479

ON CONDITIONS FOR PROPER USE OF ACTIVATED CARBON AS AN AIR PURIFICATION AGENT (2) - ITS EFFICIENCY FOR REMOVAL OF SO2 GAS.
12113 APTIC NO. 29496

ADSORPTION OF SULFUR DIOXIDE GAS BY ACTIVATED CARBON OR MOLECULAR SIEVE.
12201 APTIC NO. 29497

GULF RESIDUAL OIL HDS PROCESS.
12136 APTIC NO. 29501

EXHAUST GAS CLEANER FOR DIESEL ENGINES.
12221 APTIC NO. 29533

THE NEW PLANT FOR PRODUCTION OF SULFUR DIOXIDE AT LEVERKUSEN.
12203 APTIC NO. 29577

OUTLOOK OF ENVIRONMENTAL POLLUTION AND ITS PREVENTION TECHNOLOGY.
12124 APTIC NO. 29600

PREVENTION OF AIR POLLUTION ON IRON FOUNDRY.
12178 APTIC NO. 29602

HYDROGENIZATION DESULFURIZATION METHOD OF HEAVY HC.
12189 APTIC NO. 29603

MODERN SULFURIC ACID TECHNOLOGY.
12093 APTIC NO. 29607

DESULFURIZATION OF LIQUEFIED PROPANE GAS MOLECULAR SIEVE PROCESS.
12053 APTIC NO. 29617

AIR POLLUTION: CONTROLLED OPERATION OF A NSSC RECOVERY FURNACE.
12127 APTIC NO. 29621

SMELTER POLLUTION CONTROL--FACTS AND PROBLEMS.
12076 APTIC NO. 29622

LAW-MAKERS SAY: CLEAN UP OR SHUT DOWN.
12055 APTIC NO. 29628

FEASIBILITY STUDY OF NEW SULFUR OXIDE CONTROL PROCESSES FOR APPLICATION TO SMELTERS AND POWER PLANTS. PART IV: THE WELLMAN-LORD SO2 RECOVERY PROCESS FOR APPLICATION TO POWER PLANT FLUE GASES. (FINAL REPORT).
12208 APTIC NO. 29641

COUNTERMEASURES ON PREVENTION OF INDUSTRIAL POLLUTIONS--PART II ON SULFURIC ACID GAS.
12210 APTIC NO. 29646

METHOD TO REMOVE HARMFUL SUBSTANCES FROM STACK GAS BY-PRODUCING AMMONIUM SULFATE AND OTHERS (XV) - ACTIVATION ENERGY OF ACTIVATED CARBON FOR SO2 ADSORPTION.
12161 APTIC NO. 29648

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

DEVICE TO HOLD IN PLACE ATOMIZER NOZZLES OF A WASHER DEVICE FOR SULFUR OXIDE GAS CONTAINED IN COMBUSTION EXHAUST GAS FROM BOILER.
12138 APTIC NO. 29685

ASPHALTENE HYDRODESULFURIZATION WITH SMALL CATALYST PARTICLES DISPOSED IN A GUARD CHAMBER-MAIN REACTOR SYSTEM.
12121 APTIC NO. 29719

SULFUR DIOXIDE REMOVAL FROM STACK GASES.
12215 APTIC NO. 29720

TECHNOLOGY RENDERS ITS SERVICES TO AIR PURIFICATION AND NOISE SUPPRESSION AS PART OF ENVIRONMENTAL HYGIENE.
12227 APTIC NO. 29725

ABSORPTION OF SULFUROUS ACID GAS BY WATER SOLUTION OF POTASSIUM PHOSPHATE.
12172 APTIC NO. 29731

ON REGENERATION OF ACTIVATED CARBON HAVING ADSORBED SO2.
12173 APTIC NO. 29732

DESULFURIZATION.
12242 APTIC NO. 29742

SEPARATION OF CO2 AND H2S FROM GAS MIXTURES.
12086 APTIC NO. 29752

ADSORPTIVITY OF DESULFURIZING ACTIVATED CARBON FOR SULFUROUS ACID GAS (II) - EFFECT OF THE ADSORPTION - RINSING PROCESS ON THE ADSORPTIVITY.
12238 APTIC NO. 29788

H-OIL AS A TOOL FOR LOW SULFUR FUEL PRODUCTION.
12126 APTIC NO. 29808

ALKALI AND HEAT RECOVERY IN THE FLUE GASES FROM RECOVERY BOILERS.
12193 APTIC NO. 29852

NEW PROCESS OFFERS 99.9% SULPHUR RECOVERY.
12062 APTIC NO. 29855

DIRECT DESULFURIZATION OF HEAVY OIL.
12111 APTIC NO. 29908

ESSO/UNION FUEL OIL HYDRODESULFURIZATION PROCESSES. PART II: COMMERCIAL EXPERIENCE WITH GO-FINING.
12096 APTIC NO. 29926

DESULFURIZATION OF EXHAUST GAS.
12078 APTIC NO. 29927

EQUALIZATION OF PARTICLE TRANSFER IN TRANSFERABLE STRATUM.
12144 APTIC NO. 29928

INVESTIGATION OF HEAVY OIL DESULFURIZATION IN FIXED-BED CONTACT REACTORS.
12196 APTIC NO. 29931

CONTACT HYDRODESULFURIZATION OF PETROLEUM RESIDUAL OIL.
12200 APTIC NO. 29932

HYDRODESULFURIZATION OF HEAVY QUALITY OIL, RESIDUAL OIL, ETC.. (Jushitsuyu, zansayu to no suisokadatsuryuho). Text in Japanese. (Ishikawajima-Harima Heavy Industries (Japan)) Japan. Pat. Sho 46-819. 3p., Jan. 9, 1971. (Appl. Dec. 25, 1967, claims not given).
12218 APTIC NO. 29933

ADSORPTIVITY OF DESULFURIZING ACTIVATED CARBON FOR SULFUROUS ACID GAS (I). PERFORMANCE VARIATION OF ACTIVATED CARBON IN PILOT PLANT.
12206 APTIC NO. 29939

STUDIES ON AIR POLLUTION CONTROL BY ADDITIVE INJECTION. PART II - PREVENTION OF CLOGGING AT HIGH TEMPERATURE HEATING SURFACE OF BOILER BY ADDING MG(OH)2 POWDER.
12075 APTIC NO. 29941

ACTIVATED CARBON INDUSTRY AND PROBLEMS IN FUTURE - SPHERICAL ACTIVATED CARBON FROM COAL.
12235 APTIC NO. 29942

ESSO/UNION FUEL OIL HYDRODESULFURIZATION PROCESSES. PART I: PROCESS APPLICATIONS AND DEVELOPMENT.
12180 APTIC NO. 29954

DESULFURIZATION OF WASTE GASES AND FUELS.
12205 APTIC NO. 29957

STUDY ON THE DESULFURIZATION OF FLUE GAS BY THE USE OF DRY LIME.
12198 APTIC NO. 29972

METHOD TO MANUFACTURE CATALYST FOR DESULFURIZATION BY HYDROGEN ADDITION OF LIQUID HYDROCARBON.
12234 APTIC NO. 29974

CATALYST FOR HEAVY OIL DESULFURIZATION.
12224 APTIC NO. 29977

USE OF VANADIUM CATALYSTS IN PURIFYING INDUSTRIAL WASTE GASES FROM SULFUR DIOXIDE.
12087 APTIC NO. 29980

REACTOR DEVICE FOR HEAVY OIL DESULFURIZATION.
12149 APTIC NO. 29987

METHOD FOR MANUFACTURING SPHERICAL ACTIVE CARBON FROM COAL.
12141 APTIC NO. 29988

STUDY ON THE DIRECT DESULFURIZATION OF HEAVY OIL.
12159 APTIC NO. 29989

KINETICS OF RECOVERING SULFUR FROM THE SPENT SEED IN AN MHD POWER PLANT.
12118 APTIC NO. 30048

PROCESS FOR REMOVING SULPHUR FROM GASES.
12139 APTIC NO. 30049

CATALYTIC REDUCTION OF SULFUR DIOXIDE ON IRON-ALUMINA BIFUNCTIONAL CATALYSTS.
12152 APTIC NO. 30064

SULFURIC ACID, SO2 DEVELOPMENTS: REMOVING SO2 AND ACID MIST WITH VENTURI SCRUBBERS.
12209 APTIC NO. 30080

THE SCRUBBING OF TAIL GAS FROM SULFURIC ACID PLANTS.
12067 APTIC NO. 30096

SUMMARY OF H2SO4 MANUFACTURE.
12068 APTIC NO. 30099

ANNUAL SURVEY ON CUPOLA FURNACES, SEQUENCE EIGHT.
12101 APTIC NO. 30101

REDUCING SO2 EMISSION FROM STATIONARY SOURCES.
12098 APTIC NO. 30102

AIR POLLUTION DERIVING FROM HEATING PLANTS AND INDUSTRIAL PROCESSES AND ITS CONTROL.
12229 APTIC NO. 30106

STUDY ON DESULFURIZATION BY THE INJECTION OF LIMESTONE POWDER INTO FURNACE OF OIL FIRING BOILER (PART I).
12145 APTIC NO. 30131

A STUDY OF AIR POLLUTION AROUND A SULPHURIC ACID PLANT.
12374 APTIC NO. 29883

NO-X CONTROL FROM STATIONARY SOURCES.
12427 APTIC NO. 29764

SULFUR RECOVERY IN THE MANUFACTURE OF PIPELINE GAS FROM COAL.
12635 APTIC NO. 29143

AN SO2 REMOVAL AND RECOVERY PROCESS.
12630 APTIC NO. 29144

THE COSTS FOR MAINTENANCE OF CLEAN AIR. THE INFLUENCE OF SOCIAL COSTS ON THE SELECTION OF AN INDUSTRIAL SITE.
12633 APTIC NO. 29923

INDUSTRIAL REACTION TO SULPHUR DIOXIDE CONTROL EQUIPMENT AND STANDARDS.
12637 APTIC NO. 29604

UNLEADED GASOLINE AND SMOG-FREE AUTOS--HOW AND WHY.
12644 APTIC NO. 30035

SULFUR TRIOXIDE

THE INDUSTRIAL FIRING SYSTEMS OF THE 1970'S.
12025 APTIC NO. 28968

AIR POLLUTANTS GENERATED IN INTRA-FURNACE COMBUSTION.
12020 APTIC NO. 29532

PHYSICAL-CHEMICAL PROBLEMS OF AIR POLLUTION.
11996 APTIC NO. 29786

EXPERIMENTS CONCERNING STOICHIOMETRIC COMBUSTION IN OIL-FIRED FURNACES OF FRENCH POWER PLANTS.
12090 APTIC NO. 29513

MODERN SULFURIC ACID TECHNOLOGY.
12093 APTIC NO. 29607

ELECTRIC DUST COLLECTION DEVICE.
12151 APTIC NO. 29819

MODERN OIL BURNING TECHNOLOGY AS DISPLAYED ON THE INTHERM IN STUTTGART AND THE 6.ISH IN FRANKFURT 1971.
12187 APTIC NO. 29824

EXPERIMENTAL RESEARCH ON LOW EXCESS AIR COMBUSTION IN BOILER BURNING HEAVY OIL ONLY.
12142 APTIC NO. 29860

CONTROL OF POLLUTANT EMISSION AND SULPHURIC ACID CORROSION FROM COMBUSTION OF RESIDUAL FUEL OIL. PART I: LOW-PRESSURE HEATING BOILERS WITH MECHANICAL ATOMIZING BURNERS.
12164 APTIC NO. 30055

SULFURIC ACID, SO2 DEVELOPMENTS: REMOVING SO2 AND ACID MIST WITH VENTURI SCRUBBERS.
12209 APTIC NO. 30080

DEVELOPMENT OF A METHOD FOR DETERMINING SULPHUR OXIDES IN FLUE GASES.
12265 APTIC NO. 30084

ATMOSPHERIC REACTIONS AND SCAVENGING PROCESSES.
12426 APTIC NO. 29774

THE RESEARCH FOR THE EFFECTS OF AIR POLLUTION ON THE HUMAN BODY. (II) THE RELATIONSHIP BETWEEN ASTHMA-LIKE DISEASES OF THE SCHOOL CHILDREN AND AIR POLLUTION IN KITAKYUSHU.
12524 APTIC NO. 29683

AIR POLLUTION.
12575 APTIC NO. 29949

COMPLEX ALKALI IRON SULFATES A CONTRIBUTION TO THE THERMODYNAMICS OF FIRESDIDE HIGH-TEMPERATURE CORROSION.
12616 APTIC NO. 29783

A STUDY OF THE CONVERSION OF SO2 TO SO3.
12623 APTIC NO. 30022

COLLECTION OF LEGISLATIONS RELATED WITH MITI CONCERNING POLLUTIONS.
12646 APTIC NO. 29504

MATERIALS FOR REFERENCE ABOUT ENVIRONMENTAL POLLUTION CONTROL.
12651 APTIC NO. 29818

SULFURIC ACID

AIR POLLUTANTS GENERATED IN INTRA-FURNACE COMBUSTION.
12020 APTIC NO. 29532

PHYSICAL-CHEMICAL PROBLEMS OF AIR POLLUTION.
11996 APTIC NO. 29786

CAUSES, MEASUREMENT AND LIMITATION OF PARTICULATE EMISSION FROM OIL-FIRED STEAM BOILERS.
12000 APTIC NO. 30021

TWO NEW PROCESSES FOR RECOVERY OF SULPHUR OXIDES FROM SMELTER GASES.
12207 APTIC NO. 29200

MODERN SULFURIC ACID TECHNOLOGY.
12093 APTIC NO. 29607

SMELTER POLLUTION CONTROL--FACTS AND PROBLEMS.
12076 APTIC NO. 29622

FEASIBILITY STUDY OF NEW SULFUR OXIDE CONTROL PROCESSES FOR APPLICATION TO SMELTERS AND POWER PLANTS. PART IV: THE WELLMAN-LORD SO2 RECOVERY PROCESS FOR APPLICATION TO POWER PLANT FLUE GASES. (FINAL REPORT).
12208 APTIC NO. 29641

ADSORPTIVITY OF DESULFURIZING ACTIVATED CARBON FOR SULFUROUS ACID GAS (II) - EFFECT OF THE ADSORPTION - RINSING PROCESS ON THE ADSORPTIVITY.
12238 APTIC NO. 29788

ACID MIST PRECIPITATOR MADE OF TEFLON FIBER.
12061 APTIC NO. 29833

CONTROL OF POLLUTANT EMISSION AND SULPHURIC ACID CORROSION FROM COMBUSTION OF RESIDUAL FUEL OIL. PART I: LOW-PRESSURE HEATING BOILERS WITH MECHANICAL ATOMIZING BURNERS.
12164 APTIC NO. 30055

SULFURIC ACID, SO2 DEVELOPMENTS: REMOVING SO2 AND ACID MIST WITH VENTURI SCRUBBERS.
12209 APTIC NO. 30080

THE SCRUBBING OF TAIL GAS FROM SULFURIC ACID PLANTS.
12067 APTIC NO. 30096

SUMMARY OF H2SO4 MANUFACTURE.
12068 APTIC NO. 30099

REDUCING SO2 EMISSION FROM STATIONARY SOURCES.
12098 APTIC NO. 30102

REPORT FOR THE INVESTIGATION ON THE METHOD OF SO2 TEST.
12301 APTIC NO. 29381

ON THE EFFECT OF ACCOMPANYING GASES IN QUANTITATIVE ANALYSIS OF HYDROGEN SULFIDE USING METHYLENE BLUE.
12343 APTIC NO. 29505

RESULTS OF COMPARATIVE TESTS ON QUARTZ CONTENT OBTAINED FROM LABORATORIES USING VARIOUS TECHNIQUES OF DETERMINATION.
12327 APTIC NO. 29552

OXIDATION OF NITROGEN MONOXIDE.
12320 APTIC NO. 29676

A STUDY OF AIR POLLUTION AROUND A SULPHURIC ACID PLANT.
12374 APTIC NO. 29883

POLLUTIONS AND TOKYO METROPOLITAN GOVERNMENT.
12365 APTIC NO. 29973

ATMOSPHERIC REACTIONS AND SCAVENGING PROCESSES.
12426 APTIC NO. 29774

FORMATION OF PARTICLES BY PHOTOLYSIS AND RADIOLYSIS.
12407 APTIC NO. 29809

STUDIES ON PHOTOCHEMICAL REACTION BETWEEN SULFURIC ACID GAS AND ORGANIC COMPOUNDS (2).
12512 APTIC NO. 29463

THE ABSORPTION COEFFICIENT OF A GASEOUS SUBSTANCE ON A SWARMING FILM.
12479 APTIC NO. 29994

AIR POLLUTION.
12575 APTIC NO. 29949

DAMAGE TO PLANTS BY AIR POLLUTANTS.
12603 APTIC NO. 29746

PROBLEMS IN INDUSTRIAL POWER PLANTS.
12618 APTIC NO. 29956

AN SO2 REMOVAL AND RECOVERY PROCESS.
12630 APTIC NO. 29144

COLLECTION OF LEGISLATIONS RELATED WITH MITI CONCERNING POLLUTIONS.
12646 APTIC NO. 29504

MATERIALS FOR REFERENCE ABOUT ENVIRONMENTAL POLLUTION CONTROL.
12651 APTIC NO. 29818

SUPERSATURATION

EXHAUST GAS CLEANER FOR DIESEL ENGINES.
12221 APTIC NO. 29533

ATMOSPHERIC POLLUTION. APPARATUS FOR MEASURING THE CONCENTRATION OF CONDENSATION NUCLEI IN THE ATMOSPHERE.
12267 APTIC NO. 30041

SURFACE COATINGS

THE CALCULATION OF MIXED HYDROCARBON-OXYGENATED SOLVENT EVAPORATION.
12038 APTIC NO. 29526

A NEW ENVIRONMENTAL POLLUTANT - POLYCHLORINATED BIPHENYLS (PCB).
12044 APTIC NO. 29984

POLLUTION REGULATIONS AND THEIR EFFECT ON VEHICLE PREPARATION.
12112 APTIC NO. 29659

COMBUSTION PLANT FOR RUBBER-COATED EQUIPMENT, TANKS AND CABLES.
12191 APTIC NO. 29834

ATMOSPHERIC CORROSION OF THE ELECTROLYTIC NI-CR COATINGS.
12609 APTIC NO. 30039

SURFACE PROPERTIES

CONSIDERATIONS IN THE CONSTRUCTION OF LARGE REFUSE INCINERATORS.
12026 APTIC NO. 29547

STUDY ON MECHANISM OF REACTION WITH SULFUR DIOXIDE OF LIMESTONE POWDER BLOWN INTO COMBUSTION GAS.
12146 APTIC NO. 29479

ADSORPTIVITY OF DESULFURIZING ACTIVATED CARBON FOR SULFUROUS ACID GAS (II) - EFFECT OF THE ADSORPTION - RINSING PROCESS ON THE ADSORPTIVITY.
12238 APTIC NO. 29788

ACID MIST PRECIPITATOR MADE OF TEFLON FIBER.
12061 APTIC NO. 29833

ACTIVATED CARBON INDUSTRY AND PROBLEMS IN FUTURE - SPHERICAL ACTIVATED CARBON FROM COAL.
12235 APTIC NO. 29942

THE EFFECT OF CATALYST POISONS ON THE ACTIVITY OF CARBON MONOXIDE SHIFT CATALYSTS.
12212 APTIC NO. 29944

CATALYST FOR HEAVY OIL DESULFURIZATION.
12224 APTIC NO. 29977

ELECTROSTATIC FIELD BREAKDOWN PHENOMENA IN APPLYING CHARGED PARTICLES.
12236 APTIC NO. 30006

GAS ADSORPTION BY VOLCANIC ASH.
12197 APTIC NO. 30030

PROCESS FOR REMOVING SULPHUR FROM GASES.
12139 APTIC NO. 30049

INFRARED SPECTROSCOPIC STUDY OF THE CATALYTIC OXIDATION OF CARBON MONOXIDE TO CARBON DIOXIDE ON MANGANESE DIOXIDE.
12105 APTIC NO. 30091

POROUS ANALYTICAL FILTERS AND THEIR USE IN AIR HYGIENE.
12346 APTIC NO. 29784

ATMOSPHERIC REACTIONS AND SCAVENGING PROCESSES.
12426 APTIC NO. 29774

THE REACTION OF OZONE WITH SOLID POLYSTYRENE.
12505 APTIC NO. 29666

THE MECHANISM OF ATMOSPHERIC RUSTING AND THE EFFECT OF CU AND P ON THE RUST FORMATION OF LOW ALLOY STEELS.
12615 APTIC NO. 29631

USING TITANIUM IN THE CHEMICAL PLANT.
12610 APTIC NO. 29857

SURVEY METHODS

ITAI-ITAI (OUCH-OUCH) DISEASE AND CADMIUM POLLUTION IN JAPAN.
12581 APTIC NO. 29673

PRESENT SITUATION OF ADMINISTRATION CONCERNING POLLUTIONS.
12648 APTIC NO. 29598

SUSPENDED PARTICULATES

THE INFLUENCE OF ENVIRONMENTAL PROTECTION ON PLANNING, OPERATION AND ECONOMY OF STEAM POWER PLANTS. I. MAINTENANCE OF CLEAN AIR.
12036 APTIC NO. 29519

AIR POLLUTANTS GENERATED IN INTRA-FURNACE COMBUSTION.
12020 APTIC NO. 29532

CONSIDERATIONS IN THE CONSTRUCTION OF LARGE REFUSE INCINERATORS.
12026 APTIC NO. 29547

INCINERATOR DESIGNED TO ANTICIPATE PROBLEMS.
11994 APTIC NO. 29669

ATMOSPHERIC POLLUTION IN HEADINGS FOLLOWING SHOTFIRING.
12024 APTIC NO. 29678

EMISSION OF AIR POLLUTANTS FROM AIRCRAFT JET ENGINES.
12035 APTIC NO. 29734

PHYSICAL-CHEMICAL PROBLEMS OF AIR POLLUTION.
11996 APTIC NO. 29786

INVESTIGATION OF HEAVY METAL POLLUTION IN IWAKI CITY.
12007 APTIC NO. 29787

EXPERIMENTAL STUDY ON PLASTICS INCINERATION.
12017 APTIC NO. 29841

CAUSES, MEASUREMENT AND LIMITATION OF PARTICULATE EMISSION FROM OIL-FIRED STEAM BOILERS.
12000 APTIC NO. 30021

TAKING ANOTHER LOOK BEFORE WE TAKE THE LEAD OUT.
11997 APTIC NO. 30067

BASIC RESEARCH ON SMOKE DESULFURIZATION BY LIME-METALS, 2ND REPORT - EFFECT OF METAL ADDITION ON CALCINATION OF LIME.
12153 APTIC NO. 29080

BASIC RESEARCH ON SMOKE DESULFURIZATION BY LIME-METALS, 1ST REPORT - DESULFURIZATION EFFECT BY ADDITION OF METAL.
12154 APTIC NO. 29478

DUST COLLECTOR FOR ELECTRIC FURNACE MANUFACTURING FERROALLOY.
12123 APTIC NO. 29481

EXHAUST GAS CLEANER FOR DIESEL ENGINES.
12221 APTIC NO. 29533

OUTLOOK OF ENVIRONMENTAL POLLUTION AND ITS PREVENTION TECHNOLOGY.
12124 APTIC NO. 29600

PREVENTION OF AIR POLLUTION ON IRON FOUNDRY.
12178 APTIC NO. 29602

PULSED EMISSION CHIMNEY.
12082 APTIC NO. 29626

ENVIRONMENTAL POLLUTION CONTROL MEASURES IN WEST EUROPE AND PROBLEMS OF CARBIDE ELECTRIC FURNACE DUST IN JAPAN.
12073 APTIC NO. 29675

DEVELOPMENT OF A NEW DUST COLLECTOR.
12056 APTIC NO. 29686

EFFECTS OF THE ADDITION OF BARIUM COMPOUND ON THE SMOKE CONCENTRATION OF DIESEL EXHAUST GAS.
12057 APTIC NO. 29696

ON PUBLIC NUISANCE BY, AND ENVIRONMENTAL HYGIENE OF, PAINT MANUFACTURING INDUSTRY.
12059 APTIC NO. 29761

BAGHOUSE OPERATION AT THE WHITING, INDIANA PLANT OF THE FEDERATED METALS DIVISION AMERICAN SMELTING AND REFINING COMPANY.
12107 APTIC NO. 29772

STEAM-SMOKE MIST CONTACT DEVICE.
12174 APTIC NO. 29792

POLLUTION CONTROL AT THE SAGAMIHARA PLANT OF OUR TOKYO MACHINERY WORKS.
12199 APTIC NO. 29821

MODERN OIL BURNING TECHNOLOGY AS DISPLAYED ON THE INTHERM IN STUTTGART AND THE 6.ISH IN FRANKFURT 1971.
12187 APTIC NO. 29824

COMBUSTION PLANT FOR RUBBER-COATED EQUIPMENT, TANKS AND CABLES.
12191 APTIC NO. 29834

AIR POLLUTION TEST METHODS COMPARED IN INCINERATOR EVALUATION PROGRAM.
12119 APTIC NO. 29837

STUDY ON AUTO EXHAUST.
12241 APTIC NO. 29909

EFFECTS OF WATER INJECTION IN INLET TUBE ON NO CONCENTRATION IN DIESEL EXHAUST.
12220 APTIC NO. 29911

TO PREVENT HEAVY OIL COMBUSTION GAS FROM PRODUCING BLACK SMOKE.
12213 APTIC NO. 29930

METHOD TO ARREST AND REMOVE WHITE SMOKE PRODUCED FROM MOLTEN ZINC PLATING PROCESS.
12135 APTIC NO. 29940

REMOVAL OF BROWN FUME FROM WASTE GASES OF OPEN HEARTH FURNACE OXYGEN STEELMAKING PROCESS.
12194 APTIC NO. 29945

CAN ADDITIVES DECREASE DIESEL SMOKE? Power, 114(8):60, Aug. 1970.
12238 APTIC NO. 29788

COMBUSTION OF WASTES CENTERING AROUND REMOVAL OF NOXIOUS GAS.
12077 APTIC NO. 29985

THE PROBLEM OF INDUSTRIAL DUST: WAYS TO REGULATE ITS COLLECTION.
12099 APTIC NO. 29990

STUDIES OF VENTILATORY MEASURES INDOORS AGAINST POLLEN ALLERGY.
12116 APTIC NO. 30011

BALL BLANKETS FOR EFFLUENT TREATMENT.
12083 APTIC NO. 30034

JOINT DEMONSTRATION OF METHODS FOR EXTINGUISHMENT AND CONTROL OF BURNING COAL REFUSE PILES. (FINAL REPORT).
12066 APTIC NO. 30057

FUME INCINERATION: EFFECTIVE, EFFICIENT.
12100 APTIC NO. 30077

SULFURIC ACID, SO2 DEVELOPMENTS: REMOVING SO2 AND ACID MIST WITH VENTURI SCRUBBERS.
12209 APTIC NO. 30080

SUMMARY OF H2SO4 MANUFACTURE.
12068 APTIC NO. 30099

LOW POWER HOUSEHOLD OIL BURNING INSTALLATIONS. HOW THEY FUNCTION, PROPOSAL FOR A METHOD OF REGULATING THEM.
12079 APTIC NO. 30108

A NEW METHOD OF MEASURING THE OPACITY OF COMBUSTION FUMES.
12249 APTIC NO. 29068

REPORT FOR THE INVESTIGATION ON THE METHOD OF SO2 TEST.

12301 APTIC NO. 29381

THEORETICAL CONSIDERATION IN THE MEASUREMENT OF SMOKE PARTICLES BY OWL (II) - EFFECT OF DISPERSION.

12298 APTIC NO. 29483

GC-MS ANALYSIS OF THE SEMIVOLATILES OF CIGARETTE SMOKE.

12282 APTIC NO. 29660

APPLICATION OF FLUORIMETRY IN SMOKE MEASUREMENT.

12280 APTIC NO. 29704

FLAME PHOTOMETRIC DETECTION OF VOLATILE SULPHUR COMPOUNDS IN SMOKE FROM VARIOUS TYPES OF CIGARETTES.

12283 APTIC NO. 29874

EMISSION MONITORING WITH ACKNOWLEDGED MEASURING UNITS AND ANALYZERS.

12260 APTIC NO. 29955

SMOKE PLUMES MONITORED DAY AND NIGHT. PRACTICAL EXPERIENCE WITH A TV-LASER PLANT IN DUISBURG.

12247 APTIC NO. 30013

PIEZOLECTRIC-ELECTROSTATIC AEROSOL MASS CONCENTRATION MONITOR.

12331 APTIC NO. 30061

ATMOSPHERIC POLLUTION AT MODERN COKE WORKS.

12380 APTIC NO. 29257

AIR POLLUTION BY SMOKE AND SO2.

12372 APTIC NO. 29289

DETERMINATION OF POLYNUCLEAR AROMATICS IN SUSPENDED PARTICLES.

12393 APTIC NO. 29462

AIR POLLUTION.

12363 APTIC NO. 29510

STUDY OF THE SUSPENDED PARTICULATES AND LEAD CONCENTRATION IN THE AIR WITHIN THE CITY LIMITS OF MAGDEBURG.

12382 APTIC NO. 29515

AIR POLLUTION BY SMOKE AND SO2.

12373 APTIC NO. 29566

LEAD POLLUTION AND PHOTOCHEMICAL SMOG IN TOKYO.

12376 APTIC NO. 29647

A REPORT OF THE PERIODIC MEASUREMENT OF SOOT AND DUST, AND SULFUR OXIDES IN THE AIR AROUND THE HOSPITAL.

12381 APTIC NO. 29794

SUSPENDED PARTICULATES IN OSAKA CITY.

12375 APTIC NO. 29853

CLEANER AIR IN LONDON.

12377 APTIC NO. 29912

POLLUTIONS AND TOKYO METROPOLITAN GOVERNMENT.

12365 APTIC NO. 29973

SEASONAL VARIATION OF THE CONCENTRATION OF HEAVY METALS IN SUSPENDED DUST ON THE MAIN STREETS.

12384 APTIC NO. 30025

CONCASTER, AN AREA STUDY.

12366 APTIC NO. 30047

STUDIES ON AIR POLLUTION DUE TO AUTOMOBILE EXHAUST. REPORT 15: AIR POLLUTION AT THE VICINITY OF BOOTHS IN MEISHIN HIGHWAY.

12389 APTIC NO. 30075

EVOLUTION OF THE ATMOSPHERIC CONTAMINATION IN MADRID IN 1969.

12371 APTIC NO. 30089

INDOOR/OUTDOOR AIR QUALITY RELATIONSHIPS.

12398 APTIC NO. 30090

PROBLEMS OF AIR POLLUTION AND MEASURES TO COMBAT IT IN EL PASO, TEXAS.

12368 APTIC NO. 30094

EXPERIMENT ON PHOTOCHEMICAL REACTION OF MOTOR EXHAUST GAS.

12469 APTIC NO. 29500

DISTRIBUTION OF POLLUTION AT SOME COUNTRY SITES.

12425 APTIC NO. 29582

FORMATION OF FOG ON THE NUCLEI OF HUMIDITY CONDENSATION.

12453 APTIC NO. 29636

PHOTOCHEMICAL SMOG.

12418 APTIC NO. 29672

COLLECTION EFFICIENCY OF WATER DROPLETS IN AGCL AEROSOL.

12430 APTIC NO. 29687

SCAVENGING IN PERSPECTIVE.

12422 APTIC NO. 29688

EPISODE 104.

12410 APTIC NO. 29695

COLLECTION EFFICIENCIES OF RAINDROPS FOR SUBMICRON PARTICULATES.

12404 APTIC NO. 29709

SCAVENGING OF AEROSOL PARTICLES BY SPRAYS.

12437 APTIC NO. 29711

CONTINUOUS CHARGED CLOUD-PARTICLE SAMPLER.

12451 APTIC NO. 29712

ATMOSPHERIC REACTIONS AND SCAVENGING PROCESSES.

12426 APTIC NO. 29774

EFFECT OF SOLUBILITIES OF GASES ON THEIR SCAVENGING BY RAINDROPS.

12442 APTIC NO. 29780

AIR POLLUTION CONTROL SYSTEM (3).

12401 APTIC NO. 29795

ESTIMATION OF GROUND LEVEL CONCENTRATION BY SMOKE-DIFFUSION WIND TUNNELS.

12462 APTIC NO. 29820

TURBULENT DIFFUSION THEORY TAKING TURBULENT BOUNDARY LAYER INTO CONSIDERATION.

12463 APTIC NO. 29822

PHOTOCHEMICAL SMOG AND ITS REACTION MECHANISM.

12459 APTIC NO. 29934

ON PLUMBIC POLLUTION OF MUNICIPAL ATMOSPHERE--BEHAVIORS OF PLUMBIC COMPOUND AS AEROSOL.

12431 APTIC NO. 30073

CHEMICAL PROCESSES AT THE AIR-SEA INTERFACE: THE BEHAVIOR OF FLUORINE.

12468 APTIC NO. 30126

ON ADHESION OF SMOKE MIST PARTICULATES FLOWING THROUGH BETWEEN PLAN PARALLEL PLATES.

12518 APTIC NO. 29729

PROGRESS REVIEW NO. 62: COMBUSTION OF SINGLE DROPLETS AND SIMPLIFIED SPRAY SYSTEMS.

12493 APTIC NO. 29803

CHARGES ON DROPLETS PRODUCED BY ATOMIZATION OF SOLUTIONS.

12482 APTIC NO. 29919

EFFECTS OF ATMOSPHERIC FACTORS AND OF SO2 AND AIRBORNE DUST EMISSIONS ON INTRABRONCHIAL FLOW RESISTANCE AND INTRATHORACAL GAS VOLUME OF SOUND AND SICK MEN.

12571 APTIC NO. 29048

ITAI-ITAI (OUCH-OUCH) DISEASE AND CADMIUM POLLUTION IN JAPAN.

12581 APTIC NO. 29673

EFFECTS OF SOOT AND SMOKE ON THE HEALTH OF SCHOOL CHILDREN.

12556 APTIC NO. 29791

SOME RECENT TOPICS IN AIR POLLUTION AND HEALTH IN LONDON.

12562 APTIC NO. 29882

CHANGES IN AIRWAYS CONDUCTANCE ON SMOKING A CIGARETTE.

12540 APTIC NO. 30135

STUDIES ON THE SMOKE DAMAGE OF TREES. (I) ON THE ACUTE DAMAGE SYMPTOMS BY THE SO2.

12607 APTIC NO. 29976

COMPLEX ALKALI IRON SULFATES A CONTRIBUTION TO THE THERMODYNAMICS OF FIRESDIDE HIGH-TEMPERATURE CORROSION.

12616 APTIC NO. 29783

UNLEADED GASOLINE AND SMOG-FREE AUTOS--HOW AND WHY.

12644 APTIC NO. 30035

IT BEGAN WITH THE SMOG IN CALIFORNIA. CALIFORNIA TEST, EUROPEAN TEST--INTERNATIONAL REGULATIONS OF AUTOMOBILE EXHAUST GAS EMISSIONS.

12640 APTIC NO. 30069

THE PREVENTION OF POLLUTION. PART II-POLLUTION AND THE LAW.

12658 APTIC NO. 29474

EXPANSION AND STRENGTHENING OF AIR POLLUTION CONTROL COUNTERMEASURES.

12671 APTIC NO. 29495

COLLECTION OF LEGISLATIONS RELATED WITH MITI CONCERNING POLLUTIONS.

12646 APTIC NO. 29504

ON THE BASIC LAW FOR ENVIRONMENTAL POLLUTION CONTROL, NOISE CONTROL LAW, WATER POLLUTION PREVENTION LAW, AND AIR POLLUTION PREVENTION LAW.

12670 APTIC NO. 29509

ADDENDUM TO ENVIRONMENTAL POLLUTIONS IN KAWASAKI CITY.

12647 APTIC NO. 29511

PRESENT SITUATION OF ADMINISTRATION CONCERNING POLLUTIONS.

12648 APTIC NO. 29598

CHIBA PREFECTURAL ORDINANCE ON POLLUTIONS CONTROL AND ENFORCEMENT REGULATION OF ORDINANCE.

12649 APTIC NO. 29679

MATERIALS FOR REFERENCE ABOUT ENVIRONMENTAL POLLUTION CONTROL.

12651 APTIC NO. 29818

TOKYO FIGHTS POLLUTION. AN URGENT APPEAL FOR REFORM.
12653 APTIC NO. 29888

COMPARATIVE STUDY OF CERTAIN PROVISIONS IN MEMBER STATES FOR CONTROLLING AIR POLLUTION.
12656 APTIC NO. 30052

AIR POLLUTION--THE STATUS TODAY.
12681 APTIC NO. 28923

NOBODY BREATHES FRESH AIR. FACTS AND ARGUMENTS ABOUT AIR POLLUTION.
12677 APTIC NO. 29459

SWEDEN

ELECTROSTATIC PRECIPITATORS FOR CEMENT AND LIME INDUSTRY.
12169 APTIC NO. 29735

METHODS FOR MEASURING AND EVALUATING ODOROUS AIR POLLUTANTS AT THE SOURCE AND IN THE AMBIENT AIR.
12246 APTIC NO. 29891

CAPILLARY FILTRATION RATE ON THE HUMAN CALF DURING EXPOSURE TO CARBON MONOXIDE AND HYPOXIA (3454 M).
12578 APTIC NO. 29804

RENAL FUNCTION DURING PROLONGED EXPOSURE TO HYPOXIA AND CARBON MONOXIDE. II. ELECTROLYTE HANDLING.
12577 APTIC NO. 29805

CIRCULATION, METABOLISM, AND VENTILATION DURING PROLONGED EXPOSURE TO CARBON MONOXIDE AND TO HIGH ALTITUDE.
12560 APTIC NO. 29869

COMPARATIVE STUDY OF CERTAIN PROVISIONS IN MEMBER STATES FOR CONTROLLING AIR POLLUTION.
12656 APTIC NO. 30052

SYNERGISM

ENVIRONMENTAL POLLUTION CONTROL MEASURES IN WEST EUROPE AND PROBLEMS OF CARBIDE ELECTRIC FURNACE DUST IN JAPAN.
12073 APTIC NO. 29675

CATALYTIC REDUCTION OF SULFUR DIOXIDE ON IRON-ALUMINA BIFUNCTIONAL CATALYSTS.
12152 APTIC NO. 30064

.THE IRRITANT POTENTIAL OF POLLUTANTS IN THE ATMOSPHERE.
12271 APTIC NO. 29751

PULMONARY COMPLICATIONS OF ASBESTOS EXPOSURE.
12552 APTIC NO. 29221

ON THE PROBLEM OF THE COMBINED EFFECTS OF SULFUR DIOXIDE AND BENZPYRENE ON THE ORGANISMS OF TEST ANIMALS.
12583 APTIC NO. 29585

NOBODY BREATHES FRESH AIR. FACTS AND ARGUMENTS ABOUT AIR POLLUTION.
12677 APTIC NO. 29459

SYNTHETIC FIBERS

PROBLEMS OF PUBLIC NUISANCE CAUSED BY BAD ODORS IN HYOGO PREFECTURE.
12029 APTIC NO. 29599

THE INFLUENCE OF AIR POLLUTION UPON THE DISCOLORATION OF THE DYED STUFF AND THE DECREASE OF TENSILE STRENGTH OF SOME FIBERS.
12612 APTIC NO. 29717

STANDARD FADING CLOTHES FOR OXIDANTS.
12619 APTIC NO. 29866

SYNTHETIC RUBBER

A NEW ENVIRONMENTAL POLLUTANT - POLYCHLORINATED BIPHENYLS (PCB).
12044 APTIC NO. 29984

T

TAR

ACTIVATED CARBON INDUSTRY AND PROBLEMS IN FUTURE - SPHERICAL ACTIVATED CARBON FROM COAL.
12235 APTIC NO. 29942

THE 3,4-BENZPYRENE CONTENT OF THE AIR IN TWO INDUSTRIAL AREAS.
12400 APTIC NO. 29586

TAXATION

FAST WRITE-OFF AND OTHER TAX RELIEF.
12627 APTIC NO. 30128

NEW TREND IN POLLUTIONS COUNTERMEASURES IN THE 70 S.
12660 APTIC NO. 29507

TEFLON

ACID MIST PRECIPITATOR MADE OF TEFLON FIBER.
12061 APTIC NO. 29833

TFE-FLUOROCARBON FIBER FILTER BAGS--IT COSTS MORE TO GO FIRST CLASS.
12109 APTIC NO. 30121

TEMPERATURE

COMBUSTION OF WASTE OIL FROM COAL.
12043 APTIC NO. 29534

CONSIDERATIONS IN THE CONSTRUCTION OF LARGE REFUSE INCINERATORS.
12026 APTIC NO. 29547

PROBLEMS OF PUBLIC NUISANCE CAUSED BY BAD ODORS IN HYOGO PREFECTURE.
12029 APTIC NO. 29599

AMMONIA DISPOSAL--COKE PLANTS.
12012 APTIC NO. 29627

SELF-IGNITION OF GASEOUS FUELS THROUGH THE HEATING EFFECT OF A WAST GAS STREAM.
11998 APTIC NO. 29739

EXPERIMENTAL STUDY ON PLASTICS INCINERATION.
12017 APTIC NO. 29841

STUDY OF THE COMBUSTION OF PARTLY PRE-MIXED LAMINAR NATURAL GAS FLAMES.
12021 APTIC NO. 29948

CAUSES, MEASUREMENT AND LIMITATION OF PARTICULATE EMISSION FROM OIL-FIRED STEAM BOILERS.
12000 APTIC NO. 30021

DECONTAMINATION OF POLLUTED AIR FROM HARD PITCH PRODUCTION PLANT.
12022 APTIC NO. 30026

OXIDATION OF SODIUM SULFIDE AND MERCAPTIDE IN BLACK LIQUOR.
12071 APTIC NO. 29278

PURIFICATION DEVICE FOR AUTOMOTIVE EXHAUST GAS.
12156 APTIC NO. 29439

ON DISPOSAL OF PLASTIC WASTES (PVC) BY FLUID LAYER OF MEDIUM.
12074 APTIC NO. 29449

UTILIZATION OF CATALYST IN AIR POLLUTION CONTROL (4).
12239 APTIC NO. 29477

BASIC RESEARCH ON SMOKE DESULFURIZATION BY LIME-METALS, 1ST REPORT - DESULFURIZATION EFFECT BY ADDITION OF METAL.
12154 APTIC NO. 29478

STUDY ON MECHANISM OF REACTION WITH SULFUR DIOXIDE OF LIMESTONE POWDER BLOWN INTO COMBUSTION GAS.
12146 APTIC NO. 29479

DUST COLLECTOR FOR ELECTRIC FURNACE MANUFACTURING FERROALLOY.
12123 APTIC NO. 29481

ADSORPTION OF SULFUR DIOXIDE GAS BY ACTIVATED CARBON OR MOLECULAR SIEVE.
12201 APTIC NO. 29497

EXPERIMENTS CONCERNING STOICHIOMETRIC COMBUSTION IN OIL-FIRED FURNACES OF FRENCH POWER PLANTS.
12090 APTIC NO. 29513

AN EXPERIMENTAL STUDY ON THE PERFORMANCE OF A MULTIFUEL ENGINE. PART 3. AN ATTEMPT OF M-COMBUSTION APPLIED TO A SWIRL CHAMBER.
12183 APTIC NO. 29520

EXHAUST GAS CLEANER FOR DIESEL ENGINES.
12221 APTIC NO. 29533

MITSUBISHI-RESEARCH DISC SCRUBBER.
12080 APTIC NO. 29536

MITSUBISHI-RESEARCH WEDGE SCRUBBER.
12081 APTIC NO. 29537

THE NEW PLANT FOR PRODUCTION OF SULFUR DIOXIDE AT LEVERKUSEN.
12203 APTIC NO. 29577

HYDROGENIZATION DESULFURIZATION METHOD OF HEAVY HC.
12189 APTIC NO. 29603

EMISSION CONTROL BY EXHAUST MANIFOLD REACTOR--AN INITIAL STUDY FOR SMALL ENGINES.
12163 APTIC NO. 29629

POLLUTION REGULATIONS AND THEIR EFFECT ON VEHICLE PREPARATION.
12112 APTIC NO. 29659

ASPHALTENE HYDRODESULFURIZATION WITH SMALL CATALYST PARTICLES DISPOSED IN A GUARD CHAMBER-MAIN REACTOR SYSTEM.
12121 APTIC NO. 29719

ON REGENERATION OF ACTIVATED CARBON HAVING ADSORBED SO2.
12173 APTIC NO. 29732

ELECTROSTATIC PRECIPITATORS FOR CEMENT AND LIME INDUSTRY.
12169 APTIC NO. 29735

DEVELOPMENT OF GAS PURIFICATION INSTALLATIONS FOR ELECTRIC MELTING FURNACES.
12204 APTIC NO. 29740

BAGHOUSE OPERATION AT THE WHITING, INDIANA PLANT OF THE FEDERATED METALS DIVISION AMERICAN SMELTING AND REFINING COMPANY.
12107 APTIC NO. 29772

GASIFICATION OF HYDROCARBONS.
12137 APTIC NO. 29779

ADSORPTIVITY OF DESULFURIZING ACTIVATED CARBON FOR SULFUROUS ACID GAS (II) - EFFECT OF THE ADSORPTION - RINSING PROCESS ON THE ADSORPTIVITY.
12238 APTIC NO. 29788

REMOVAL OF CHLORINE FROM GASES.
12177 APTIC NO. 29802

H-OIL AS A TOOL FOR LOW SULFUR FUEL PRODUCTION.
12126 APTIC NO. 29808

ACID MIST PRECIPITATOR MADE OF TEFLON FIBER.
12061 APTIC NO. 29833

COMBUSTION PLANT FOR RUBBER-COATED EQUIPMENT, TANKS AND CABLES.
12191 APTIC NO. 29834

PRINCIPLES OF COLLECTING PARTICULATES: DRY, WET OR ELECTROSTATICALLY.
12232 APTIC NO. 29838

EXPERIMENTAL RESEARCH ON LOW EXCESS AIR COMBUSTION IN BOILER BURNING HEAVY OIL ONLY.
12142 APTIC NO. 29860

CONTACT HYDRODESULFURIZATION OF PETROLEUM RESIDUAL OIL.
12200 APTIC NO. 29932

HYDRODESULFURIZATION OF HEAVY QUALITY OIL, RESIDUAL OIL, ETC.. (Jushitsuyu, zansayu to no suisokadatsuryuho). Text in Japanese. (Ishikawajima-Harima Heavy Industries (Japan)) Japan. Pat. Sho 46-819. 3p., Jan. 9, 1971. (Appl. Dec. 25, 1967, claims not given).
12218 APTIC NO. 29933

ADSORPTIVITY OF DESULFURIZING ACTIVATED CARBON FOR SULFUROUS ACID GAS (1). PERFORMANCE VARIATION OF ACTIVATED CARBON IN PILOT PLANT.
12206 APTIC NO. 29939

STUDIES ON AIR POLLUTION CONTROL BY ADDITIVE INJECTION. PART II - PREVENTION OF CLOGGING AT HIGH TEMPERATURE HEATING SURFACE OF BOILER BY ADDING MG(OH)2 POWDER.
12075 APTIC NO. 29941

ACTIVATED CARBON INDUSTRY AND PROBLEMS IN FUTURE - SPHERICAL ACTIVATED CARBON FROM COAL.
12235 APTIC NO. 29942

THE EFFECT OF CATALYST POISONS ON THE ACTIVITY OF CARBON MONOXIDE SHIFT CATALYSTS.
12212 APTIC NO. 29944

STUDY ON THE DESULFURIZATION OF FLUE GAS BY THE USE OF DRY LIME.
12198 APTIC NO. 29972

METHOD TO MANUFACTURE CATALYST FOR DESULFURIZATION BY HYDROGEN ADDITION OF LIQUID HYDROCARBON.
12234 APTIC NO. 29974

ON THE REACTIVITY OF AMINES WITH OZONE.
12190 APTIC NO. 29978

USE OF VANADIUM CATALYSTS IN PURIFYING INDUSTRIAL WASTE GASES FROM SULFUR DIOXIDE.
12087 APTIC NO. 29980

COMBUSTION OF WASTES CENTERING AROUND REMOVAL OF NOXIOUS GAS.
12077 APTIC NO. 29985

METHOD FOR MANUFACTURING SPHERICAL ACTIVE CARBON FROM COAL.
12141 APTIC NO. 29988

STUDY ON THE DIRECT DESULFURIZATION OF HEAVY OIL.
12159 APTIC NO. 29989

GAS ADSORPTION BY VOLCANIC ASH.
12197 APTIC NO. 30030

ELIMINATION OF OXIDES CONTAINED IN CERTAIN RESIDUAL INDUSTRIAL GASES.
12129 APTIC NO. 30043

IMPROVEMENTS IN OR RELATING TO ELECTRO-PRECIPITATORS.
12110 APTIC NO. 30044

KINETICS OF RECOVERING SULFUR FROM THE SPENT SEED IN AN MHD POWER PLANT.
12118 APTIC NO. 30048

PROCESS FOR REMOVING SULPHUR FROM GASES.
12139 APTIC NO. 30049

CATALYTIC REDUCTION OF SULFUR DIOXIDE ON IRON-ALUMINA BIFUNCTIONAL CATALYSTS.
12152 APTIC NO. 30064

ON A DUST-COLLECTING DEVICE FOR A FERROSILICON FURNACE.
12219 APTIC NO. 30086

FIRST RESULTS WITH THE M.A.N.-EXPERIMENTAL GAS TURBINE FOR COMMERCIAL VEHICLES.
12131 APTIC NO. 30088

INFRARED SPECTROSCOPIC STUDY OF THE CATALYTIC OXIDATION OF CARBON MONOXIDE TO CARBON DIOXIDE ON MANGANESE DIOXIDE.
12105 APTIC NO. 30091

FILTER FOR COLLECTING CARBON BLACK.
12130 APTIC NO. 30104

LOW POWER HOUSEHOLD OIL BURNING INSTALLATIONS. HOW THEY FUNCTION, PROPOSAL FOR A METHOD OF REGULATING THEM.
12079 APTIC NO. 30108

STUDY ON DESULFURIZATION BY THE INJECTION OF LIMESTONE POWDER INTO FURNACE OF OIL FIRING BOILER (PART I).
12145 APTIC NO. 30131

QUANTITATIVE ANALYSIS OF NO IN ATMOSPHERE - ON CHANGES IN SALTZMAN COEFFICIENT WITH CHANGE IN COMPOSITION OF SALTZMAN REAGENTS.
12308 APTIC NO. 29480

RECORDING DEVICE COMBINED WITH THERMAL PRECIPITATOR FOR MEASURING DUST CONTENT IN AIR.
12285 APTIC NO. 29540

COMPARISON OF VARIOUS METHODS OF DETERMINING QUARTZ CONTENT IN NOXIOUS DUST.
12263 APTIC NO. 29546

A GAS ANALYSER FOR THE MEASUREMENT OF IMPURITIES IN AIR.
12277 APTIC NO. 29581

THE ADIABATIC FLASH PHOTOLYSIS OF NO2 AND SO2.
12259 APTIC NO. 29630

A METHOD FOR OBTAINING DILUTE MIXTURES OF GASES.
12284 APTIC NO. 29651

OXIDATION OF NITROGEN MONOXIDE.
12320 APTIC NO. 29676

SIMPLIFIED TECHNIQUES IN AIR POLLUTION MEASUREMENT.
12289 APTIC NO. 29771

ANALYSIS OF MONOETHANOLAMIN IN THE AIR.
12339 APTIC NO. 29970

CALCULATION METHODS OF SPECTRAL ABSORPTION OF INFRARED RADIATION BY ATMOSPHERIC GASES.
12323 APTIC NO. 30103

ANALYSIS OF HC OF LOW GRADE IN ATMOSPHERE.
12391 APTIC NO. 29482

FORMATION OF PARTICLES BY PHOTOLYSIS AND RADIOLYSIS.
12407 APTIC NO. 29809

PHOTOCHEMICAL REACTIONS OF MOTOR VEHICLE EXHAUST GASES.
12402 APTIC NO. 29960

IGNITION KINTICS IN HIGH-TEMPERATURE OXIDATION WITH NITROUS OXIDE IN SHOCK WAVES.
12509 APTIC NO. 29095

INVESTIGATION OF NITRIC OXIDE FORMATION KINETICS IN COMBUSTION PROCESSES: THE HYDROGEN-OXYGEN-NITROGEN REACTION.
12477 APTIC NO. 29610

METHANESULFENYL CHLORIDE. V. THE SPONTANEOUS DECOMPOSITION OF METHANESULFENYL CHLORIDE AND METHYLSULFUR TRICHLORIDE.
12485 APTIC NO. 29674

INITIATION RATE FOR SHOCK-HEATED HYDROGEN-OXYGEN CARBON MONOXIDE- ARGON MIXTURES AS DETERMINED BY OH INDUCTION TIME MEASUREMENTS.
12490 APTIC NO. 29700

HETEROGENEOUS CATALYSIS INVOLVING ASTOICHIOMETRIC COMPONENTS. IV. INITIATION EFFECTS OF CARBON MONOXIDE AND OXYGEN OXIDE IN THE HYDROPOLYMERIZATION OF PROPENE AND ISOBUTENE.
12488 APTIC NO. 29871

KINETICS AND MECHANISMS OF THE VIBRATIONAL RELAXATION OF NOX2PI(V EQUALS 1) IN THE TEMPERATURE RANGE 100-433 K.
12474 APTIC NO. 29881

REDUCTION OF MAGNESIUM SULPHATE BY CARBON MONOXIDE.
12498 APTIC NO. 29943

EXPERIMENTAL FUNCTIONS OF INTEGRAL ABSORPTION IN H2O, AND CO2, N2O, CH4, CO, NO VAPOUR BANDS.
12502 APTIC NO. 29964

STANDARD STATES FOR THERMOCHEMICAL AND ACTIVATION PARAMETERS.
12491 APTIC NO. 30024

SPECTROSCOPIC STUDIES OF PORPHYRINS, PHTHALOCYANINES, AND CS2 IN INERT MATRICES.
12471 APTIC NO. 30050

DETERMINATION OF THE DISPERSION OF SCATTERING NEAR THE CRITICAL POINT USING THE SCATTERED LIGHT INDICATRIX.
12499 APTIC NO. 30051

ATMOSPHERIC CORROSION OF SILVER.
12614 APTIC NO. 29951

EFFECT OF LOW SILICIUM CONTENT AND SOME SURFACE TREATMENT ON THE OXIDATION OF CARBON STEELS IN CARBON DIOXIDE ATMOSPHERES AT MEDIUM TEMPERATURES.
12611 APTIC NO. 29995

TEMPERATURE (ATMOSPHERIC)

PROBLEMS OF PUBLIC NUISANCE CAUSED BY BAD ODORS IN HYOGO PREFECTURE.
12029 APTIC NO. 29599

INVESTIGATION ON THE MEASURING ERRORS OF CONDUCTOMETRIC SULFUR DIOXIDE ANALYZER USED FOR AIR POLLUTION MONITOR.
12356 APTIC NO. 29398

TRIAL CONSTRUCTION OF NON-DISPERSION TYPE VISIBLE LIGHT GAS ANALYZE AND DETERMINATION OF NITROGEN DIOXIDE, CHLORINE, AND BROMINE.
12303 APTIC NO. 29762

A COMPREHENSIVE SAMPLING SYSTEM FOR STUDYING THE RELATION BETWEEN VISIBILITY, METEOROLOGICAL PARAMETERS AND ATMOSPHERIC POLLUTION.
12276 APTIC NO. 30082

GASEOUS PLUME DIFFUSION ABOUT ISOLATED STRUCTURES OF SIMPLE GEOMETRY. (ANNUAL PROGRESS REPORT).
12438 APTIC NO. 29584

THE PREVENTION OF POLLUTION.
12416 APTIC NO. 29623

THE EFFECT OF ATMOSPHERIC CONDITIONS ON PLUME RISE.
12455 APTIC NO. 29865

EFFECT OF THE TEMPERATURE DEPENDENCE OF OZONE ABSORPTION ON VERTICAL OZONE DISTRIBUTIONS DEDUCED FROM UMKEHR OBSERVATIONS.
12415 APTIC NO. 29875

EFFECTS OF ATMOSPHERIC CONDITIONS ON AUTOMOBILE EXHAUST GAS COMPOSITIONS.
12461 APTIC NO. 29893

PHOTOCHEMICAL REACTIONS OF MOTOR VEHICLE EXHAUST GASES.
12402 APTIC NO. 29960

DISCUSSIONS DEPTH OF THE BOUNDARY LAYER.
ERROR

EFFECTS OF ATMOSPHERIC FACTORS AND OF SO2 AND AIRBORNE DUST EMISSIONS ON INTRABRONCHIAL FLOW RESISTANCE AND INTRATHORACAL GAS VOLUME OF SOUND AND SICK MEN.
12571 APTIC NO. 29048

PATIENT ADVICE DURING ACUTE AIR POLLUTION EPISODE.
12531 APTIC NO. 29878

AIR POLLUTION AND ATMOSPHERIC CORROSION.
12613 APTIC NO. 29222

ATMOSPHERIC CORROSION OF SILVER.
12614 APTIC NO. 29951

INDUSTRIAL EMISSIONS: AN ANALYSIS OF SOME KEY FACTORS.
12669 APTIC NO. 29469

NEW TREND IN POLLUTIONS COUNTERMEASURES IN THE 70 S.
12660 APTIC NO. 29507

TEMPERATURE GRADIENT

DISTRIBUTION OF POLLUTION AT SOME COUNTRY SITES.
12425 APTIC NO. 29582

TEMPERATURE SENSING INSTR

ON A DUST-COLLECTING DEVICE FOR A FERROSILICON FURNACE.
12219 APTIC NO. 30086

TENSILE STRENGTH

THE INFLUENCE OF AIR POLLUTION UPON THE DISCOLORATION OF THE DYED STUFF AND THE DECREASE OF TENSILE STRENGTH OF SOME FIBERS.
12612 APTIC NO. 29717

TEST ENGINES

AN EXPERIMENTAL STUDY ON THE PERFORMANCE OF A MULTIFUEL ENGINE. PART 3. AN ATTEMPT OF M-COMBUSTION APPLIED TO A SWIRL CHAMBER.
12183 APTIC NO. 29520

AN EXPERIMENT ON VALVE RECESSION BY NON-LEADED GASOLINE.
12222 APTIC NO. 29656

CONTROL OF EXHAUST GAS EMISSION OF MITSUBISHI COLT GALANT.
12228 APTIC NO. 29901

LAB TESTS SHOW ELECTRIC FIELD MIGHT HELP REDUCE ENGINE KNOCK.
12088 APTIC NO. 30036

FIRST RESULTS WITH THE M.A.N.-EXPERIMENTAL GAS TURBINE FOR COMMERCIAL VEHICLES.
12131 APTIC NO. 30088

EXHAUST GAS EVALUATION BY AIR RATIO COEFFICIENTS.
12278 APTIC NO. 29638

TETRAETHYL LEAD

WHY LEAD IN GASOLINE? THE EFFECT OF LEAD CONTAINING ANTIKNOCK AGENTS FOR OTTO ENGINE FUELS.
11995 APTIC NO. 29782

PHYSICAL-CHEMICAL PROBLEMS OF AIR POLLUTION.
11996 APTIC NO. 29786

GASOLINE WITHOUT LEAD. TECHNICAL POSSIBILITIES FOR A NON-LEADED FUEL.
12084 APTIC NO. 30010

FOUR-ALKYL LEAD AND ENVIRONMENTAL POLLUTION.
12588 APTIC NO. 29825

TEXAS

PROBLEMS OF AIR POLLUTION AND MEASURES TO COMBAT IT IN EL PASO, TEXAS.
12368 APTIC NO. 30094

TEXTILES

PROBLEMS OF PUBLIC NUISANCE CAUSED BY BAD ODORS IN HYOGO PREFECTURE.
12029 APTIC NO. 29599

BAGHOUSE OPERATION AT THE WHITING, INDIANA PLANT OF THE FEDERATED METALS DIVISION AMERICAN SMELTING AND REFINING COMPANY.
12107 APTIC NO. 29772

THE INFLUENCE OF AIR POLLUTION UPON THE DISCOLORATION OF THE DYED STUFF AND THE DECREASE OF TENSILE STRENGTH OF SOME FIBERS.
12612 APTIC NO. 29717

STANDARD FADING CLOTHES FOR OXIDANTS.
12619 APTIC NO. 29866

THERMAL RADIATION

A NATIONAL ESTIMATE OF PUBLIC AND INDUSTRIAL HEAT REJECTION REQUIREMENTS BY DECADES THROUGH THE YEAR 2000 AD.
12018 APTIC NO. 29272

COLLECTION EFFICIENCY OF WATER DROPLETS IN AGCL AEROSOL.
12430 APTIC NO. 29687

THERMAL-DIFFUSION CHAMBERS AS CLOUD-NUCLEI COUNTERS.
12452 APTIC NO. 29714

TOWARD A RATIONAL POWER POLICY: RECONCILING NEEDS FOR ENERGY AND ENVIRONMENTAL PROTECTION.
12403 APTIC NO. 29986

OUR ENVIRONMENT--OPTIONS ON THE WAY INTO THE FUTURE.
12675 APTIC NO. 29722

THERMODYNAMICS

BASIC RESEARCH ON SMOKE DESULFURIZATION BY LIME-METALS, 2ND REPORT - EFFECT OF METAL ADDITION ON CALCINATION OF LIME.
12153 APTIC NO. 29080

EXHAUST GAS CLEANER FOR DIESEL ENGINES.
12221 APTIC NO. 29533

AIR POLLUTION: CONTROLLED OPERATION OF A NSSC RECOVERY FURNACE.
12127 APTIC NO. 29621

METHOD TO REMOVE HARMFUL SUBSTANCES FROM STACK GAS BY-PRODUCING AMMONIUM SULFATE AND OTHERS (XV) - ACTIVATION ENERGY OF ACTIVATED CARBON FOR SO2 ADSORPTION.
12161 APTIC NO. 29648

GASIFICATION OF HYDROCARBONS.
12137 APTIC NO. 29779

ATTEMPT AT A THERMODYNAMIC SOLUTION: AUTOMOBILE EXHAUST GASES.
12147 APTIC NO. 29906

ON THE REACTIVITY OF AMINES WITH OZONE.
12190 APTIC NO. 29978

INTERNATIONAL CONFERENCE ON CONDENSATION NUCLEI AND ICE-FORMING NUCLEI.
12454 APTIC NO. 29699

THERMODYNAMICS OF THE AEROSOLS IN THE ATMOSPHERE.
12428 APTIC NO. 29785

DISSOCIATIVE ELECTRON ATTACHMENT PROCESSES IN SO2 AND NO2.
12444 APTIC NO. 30008

THE ULTRA-VIOLET PHOTOLYSIS OF OZONE IN THE PRESENCE OF WATER VAPOUR.
12435 APTIC NO. 30012

SOME OBSERVATIONS ON THE ABNORMAL AGGLOMERATION OF CARBON BLACK AND OF GRAPHITE POWDER.
12506 APTIC NO. 29548

INVESTIGATION OF NITRIC OXIDE FORMATION KINETICS IN COMBUSTION PROCESSES: THE HYDROGEN-OXYGEN-NITROGEN REACTION.
12477 APTIC NO. 29610

THERMAL AND DIFFUSIONAL EFFECTS IN NONCATALYTIC SOLID GAS REACTIONS.
12522 APTIC NO. 29612

THE ADSORPTION OF CARBON MONOXIDE ON CU(001) LEED AND AUGER EMISSION STUDIES.
12496 APTIC NO. 29799

STANDARD STATES FOR THERMOCHEMICAL AND ACTIVATION PARAMETERS.
12491 APTIC NO. 30024

COMPLEX ALKALI IRON SULFATES A CONTRIBUTION TO THE THERMODYNAMICS OF FIRESDIDE HIGH-TEMPERATURE CORROSION.
12616 APTIC NO. 29783

THERMOMETERS

ON A DUST-COLLECTING DEVICE FOR A FERROSILICON FURNACE.
12219 APTIC NO. 30086

THIN-LAYER CHROMATOGRAPHY

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

THE GAS CHROMATOGRAPHIC DETERMINATION OF PESTICIDES. (PART 3) DETERMINATION OF RESIDUES OF ORGANOPHOSPHORUS PESTICIDES.
12349 APTIC NO. 30134

THE 3,4-BENZPYRENE CONTENT OF THE AIR IN TWO INDUSTRIAL AREAS.
12400 APTIC NO. 29586

STUDIES ON PHOTOCHEMICAL REACTION BETWEEN SULFURIC ACID GAS AND ORGANIC COMPOUNDS (2).
12512 APTIC NO. 29463

PHOTOCHEMICAL REACTION BETWEEN SO2 AND ORGANIC COMPOUNDS (II).
12514 APTIC NO. 29967

THE PRESENT RESULTS OF DETERMINATIONS OF 3,4-BENZPYRENE IN THE AIR OVER BUDAPEST.
12631 APTIC NO. 29590

THIOPHENE

CATALYST FOR HEAVY OIL DESULFURIZATION.
12224 APTIC NO. 29977

THRESHOLDS

ATMOSPHERIC POLLUTION IN HEADINGS FOLLOWING SHOTFIRING.
12024 APTIC NO. 29678

ELIMINATION OF OXIDES CONTAINED IN CERTAIN RESIDUAL INDUSTRIAL GASES.
12129 APTIC NO. 30043

METHODS FOR MEASURING AND EVALUATING ODOROUS AIR POLLUTANTS AT THE SOURCE AND IN THE AMBIENT AIR.
12246 APTIC NO. 29891

BIOLOGICAL MONITORING GUIDES. FLUORIDES.
12525 APTIC NO. 29807

THUNDERSTORMS

CONCENTRATION VARIATION OF SOME TRACE METALS IN PRECIPITATION FROM GREAT PLAINS THUNDERSTORMS.
12457 APTIC NO. 29706

TIMED FUEL INJECTION

AN EXPERIMENTAL STUDY ON THE PERFORMANCE OF A MULTIFUEL ENGINE. PART 3. AN ATTEMPT OF M-COMBUSTION APPLIED TO A SWIRL CHAMBER.
12183 APTIC NO. 29520

CONTROL OF EXHAUST GAS EMISSION OF MITSUBISHI COLT GALANT.
12228 APTIC NO. 29901

ATTEMPT AT A THERMODYNAMIC SOLUTION: AUTOMOBILE EXHAUST GASES.
12147 APTIC NO. 29906

STUDY ON AUTO EXHAUST.
12241 APTIC NO. 29909

EFFECTS OF WATER INJECTION IN INLET TUBE ON NO CONCENTRATION IN DIESEL EXHAUST.
12220 APTIC NO. 29911

CAN ADDITIVES DECREASE DIESEL SMOKE? Power, 114(8):60, Aug. 1970.
12085 APTIC NO. 29680

AIR POLLUTION.
12363 APTIC NO. 29510

TIN COMPOUNDS

THE ANALYSIS OF MERCURY IN URINE, BLOOD, WATER, AND AIR.
12306 APTIC NO. 29652

TRACE ELEMENTS IN ATMOSPHERIC PRECIPITATION AROUND THE OTKAZNOE RESERVOIR.
12432 APTIC NO. 29910

TIP BURN

STUDIES ON THE SMOKE DAMAGE OF TREES. (I) ON THE ACUTE DAMAGE SYMPTOMS BY THE SO2.
12607 APTIC NO. 29976

TISSUE CULTURES

INSTRUMENT FOR STUDYING THE ACTION OF EXHAUST GASES DILUTED IN THE AIR, ON BACTERIAL, CELLULAR, AND TISSULAR CULTURES.
12476 APTIC NO. 29849

TISSUES

MICROEMISSION SPECTROCHEMICAL ANALYSIS OF HUMAN LUNGS FOR BERYLLIUM.
12580 APTIC NO. 29475

PATHOLOGICAL STUDY ON THE EXPERIMENTAL RABBITS AT AIR-POLLUTED AREA IN YOKKAICHI.
12590 APTIC NO. 29502

CAPILLARY FILTRATION RATE ON THE HUMAN CALF DURING EXPOSURE TO CARBON MONOXIDE AND HYPOXIA (3454 M).
12578 APTIC NO. 29804

TITANIUM

USING TITANIUM IN THE CHEMICAL PLANT.
12610 APTIC NO. 29857

TITANIUM COMPOUNDS

REPORT FOR THE INVESTIGATION ON THE METHOD OF SO2 TEST.
12301 APTIC NO. 29381

TRACE ELEMENTS IN ATMOSPHERIC PRECIPITATION AROUND THE OTKAZNOE RESERVOIR.
12432 APTIC NO. 29910

TOBACCO

PLANTS AND POLLUTED AIR.
12230 APTIC NO. 30083

FLAME PHOTOMETRIC DETECTION OF VOLATILE SULPHUR COMPOUNDS IN SMOKE FROM VARIOUS TYPES OF CIGARETTES.
12283 APTIC NO. 29874

ON COMPOSITE HARM TO PLANTS BY SULFUROUS ACID GAS AND OXIDANT.
12604 APTIC NO. 29671

ETHYLENE PRODUCTION FROM OZONE INJURED PLANTS.
12596 APTIC NO. 30059

TOKYO

REPORT ON THE INVESTIGATION INTO THE MAINTENANCE AND THE SUPERVISION OF AIR-CLEANING APPARATUS AS AN INDICATION OF AIR POLLUTION.
12122 APTIC NO. 29840

REPORT ON LEAD POLLUTION SURVEY.
12361 APTIC NO. 29465

ANALYSIS OF HC OF LOW GRADE IN ATMOSPHERE.
12391 APTIC NO. 29482

AIR POLLUTION BY EXHAUST GAS II. DETERMINATION OF LEAD AND CARBON MONOXIDE INSIDE A GARAGE AND A REPAIR FACTORY IN TOKYO CITY.
12397 APTIC NO. 29576

LEAD POLLUTION AND PHOTOCHEMICAL SMOG IN TOKYO.
12376 APTIC NO. 29647

POLLUTIONS AND TOKYO METROPOLITAN GOVERNMENT.
12365 APTIC NO. 29973

EVALUATION TRIALS OF URBAN AIR POLLUTION MODELS.
12439 APTIC NO. 29697

THE GUIDANCE STANDARD OF THE EQUIPMENT FOR TREATING EXHAUST GASES FROM THE FACTORY (FORMALDEHYDE):APR. 1970.
12636 APTIC NO. 29756

MATERIALS FOR REFERENCE ABOUT ENVIRONMENTAL POLLUTION CONTROL.
12651 APTIC NO. 29818

POPULATION PLANTS TREES: ENVIRONMENTAL PROTECTION IN JAPAN.
12652 APTIC NO. 29859

TOKYO FIGHTS POLLUTION. AN URGENT APPEAL FOR REFORM.
12653 APTIC NO. 29888

CHANGE IN POLLUTANTS AND FUTURE PROBLEMS.
12680 APTIC NO. 29743

TOLUENES

ON COMPOSITION AND LEAD CONTENT OF COMMERCIAL GASOLINE.
12048 APTIC NO. 29936

GAS CHROMATOGRAPHIC ANALYSIS OF BENZENE AND TOLUENE IN AUTOMOBILE EXHAUST GAS.
12295 APTIC NO. 29907

EXPERIMENTAL STUDIES ON THE HEALTH EFFECTS OF AUTO EXHAUST GAS IN LOW CONCENTRATIONS. (REPORT 1) PRELIMINARY EXPERIMENT.
12589 APTIC NO. 29921

TOMATOES

ON COMPOSITE HARM TO PLANTS BY SULFUROUS ACID GAS AND OXIDANT.
12604 APTIC NO. 29671

ETHYLENE PRODUCTION FROM OZONE INJURED PLANTS.
12596 APTIC NO. 30059

TOPOGRAPHIC INTERACTIONS

THE 3,4-BENZPYRENE CONTENT OF THE AIR IN TWO INDUSTRIAL AREAS.
12400 APTIC NO. 29586

REPLY.
12411 APTIC NO. 29470

EPISODE 104.
12410 APTIC NO. 29695

ATMOSPHERIC DISPERSION OF STACK EFFLUENTS.
12458 APTIC NO. 29773

AIR POLLUTION CONTROL SYSTEM (3).
12401 APTIC NO. 29795

ESTIMATION OF GROUND LEVEL CONCENTRATION BY SMOKE-DIFFUSION WIND TUNNELS.
12462 APTIC NO. 29820

A NUMERICAL EXPERIMENT IN SIMULATING THE TRANSPORT OF SULFUR DIOXIDE THROUGH THE ATMOSPHERE.
12446 APTIC NO. 29952

ITAI-ITAI (OUCH-OUCH) DISEASE AND CADMIUM POLLUTION IN JAPAN.
12581 APTIC NO. 29673

TOXIC TOLERANCES

MERCURY IN THE ENVIRONMENT.
11992 APTIC NO. 29489

A CONTRIBUTION TO THE EVALUATION OF THE RISK OF SILICOSIS.
12549 APTIC NO. 29558

LEAD MEN HEADING TOWARD DESTRUCTION--SPREADING OMINOUS METAL POLLUTIONS.
12569 APTIC NO. 29789

RECENT RESEARCH INTO THE EFFECT OF LOW LEVEL CARBON MONOXIDE EXPOSURE ON PSYCHOMOTOR PERFORMANCE IN HEALTHY HUMANS.
12574 APTIC NO. 29846

ON THE STUDY OF ALLERGIC REACTIONS IN CONNECTION WITH AIR POLLUTION IN SETTLEMENTS WITH INDUSTRIAL DISCHARGES.
12528 APTIC NO. 29981

TOXICITY

NITROGEN DIOXIDE.
11988 APTIC NO. 29567

MERCURY IN MAN.
12011 APTIC NO. 29643

LEAD POLLUTION--A GROWING HAZARD TO PUBLIC HEALTH.
11999 APTIC NO. 29872

A NEW ENVIRONMENTAL POLLUTANT - POLYCHLORINATED BIPHENYLS (PCB).
12044 APTIC NO. 29984

TERATOGENIC EFFECTS OF ANESTHETIC AGENTS: NITROUS OXIDE.
12584 APTIC NO. 28919

LEAD IN THE ENVIRONMENT.
12564 APTIC NO. 29493

ON HYGIENIC AND TOXICOLOGICAL PROBLEMS OF POLLUTION BY ARSENIC.
12534 APTIC NO. 29587

CARBON MONOXIDE AS TOXIC GAS.
12538 APTIC NO. 29640

ITAI-ITAI (OUCH-OUCH) DISEASE AND CADMIUM POLLUTION IN JAPAN.
12581 APTIC NO. 29673

FOUR-ALKYL LEAD AND ENVIRONMENTAL POLLUTION.
12588 APTIC NO. 29825

RECENT RESEARCH INTO THE EFFECT OF LOW LEVEL CARBON MONOXIDE EXPOSURE ON PSYCHOMOTOR PERFORMANCE IN HEALTHY HUMANS.
12574 APTIC NO. 29846

EXPERIMENTAL STUDIES ON THE HEALTH EFFECTS OF AUTO EXHAUST GAS IN LOW CONCENTRATIONS. (REPORT 1) PRELIMINARY EXPERIMENT.
12589 APTIC NO. 29921

METABOLIC EFFECTS OF ATMOSPHERIC FLUORIDES ON PLANTS.
12605 APTIC NO. 29616

FURTHER STUDIES ON THE EFFECT OF SULPHUR DIOXIDE ON LICHENS AND BRYOPHYTES.
12599 APTIC NO. 29645

NOBODY BREATHES FRESH AIR. FACTS AND ARGUMENTS ABOUT AIR POLLUTION.
12677 APTIC NO. 29459

TRACE ANALYSIS

INVESTIGATION OF ACTIVATION ANALYSIS OF TRACE MERCURY IN GAS BY RADIOISOTOPE TRACER METHOD.
12328 APTIC NO. 29770

FLUOROMETRIC DETERMINATION OF BROMINE: APPLICATION TO MEASUREMENT OF BROMINE AEROSOLS.
12255 APTIC NO. 29811

DETERMINATION OF IRON, CHROMIUM, COBALT, NICKEL, AND SCANDIUM IN ASBESTOS BY NEUTRON ACTIVATION ANALYSIS.
12292 APTIC NO. 30129

SCAVENGING IN PERSPECTIVE.
12422 APTIC NO. 29688

STABLE ELEMENTS OF THE ATMOSPHERE AS TRACERS OF PRECIPITATION SCAVENGING.
12445 APTIC NO. 29705

CONCENTRATION VARIATION OF SOME TRACE METALS IN PRECIPITATION FROM GREAT PLAINS THUNDERSTORMS.
12457 APTIC NO. 29706

AIR POLLUTION BY TRACE METALS IN JAPAN.
12561 APTIC NO. 29816

TRACERS

SCAVENGING IN PERSPECTIVE.
12422 APTIC NO. 29688

SCAVENGING OF TRACER IN SEVERE STORMS.
12417 APTIC NO. 29691

IN-CLOUD SCAVENGING ANALYSIS FROM COSMOGENIC RADIONUCLIDE MEASUREMENTS.
12440 APTIC NO. 29694

STABLE ELEMENTS OF THE ATMOSPHERE AS TRACERS OF PRECIPITATION SCAVENGING.
12445 APTIC NO. 29705

SCAVENGING OF SOLUBLE DYE PARTICLES BY RAIN.
12414 APTIC NO. 29708

TRACHEA

PATHOLOGICAL STUDY ON THE EXPERIMENTAL RABBITS AT AIR-POLLUTED AREA IN YOKKAICHI.
12590 APTIC NO. 29502

TRAINS

A REPORT OF THE PERIODIC MEASUREMENT OF SOOT AND DUST, AND SULFUR OXIDES IN THE AIR AROUND THE HOSPITAL.
12381 APTIC NO. 29794

TRANSMISSOMETERS

A NEW METHOD OF MEASURING THE OPACITY OF COMBUSTION FUMES.
12249 APTIC NO. 29068

TRANSPORT

SCAVENGING IN PERSPECTIVE.
12422 APTIC NO. 29688

DISSIPATION OF SO2 GENERATED IN A STEELWORK INTO THE GROUND LAYER OF THE ATMOSPHERE.
12467 APTIC NO. 29867

A METHOD FOR OPTIMIZING POLLUTANT EMISSIONS IN AN AIRSHED.
12448 APTIC NO. 29903

A NUMERICAL EXPERIMENT IN SIMULATING THE TRANSPORT OF SULFUR DIOXIDE THROUGH THE ATMOSPHERE.
12446 APTIC NO. 29952

TRAPPING (SAMPLING)

ON MEASUREMENT OF ODOR.
12256 APTIC NO. 29726

TREES

DEVELOPMENT OF A METEOROLOGICALLY CONTROLLED AGRICULTURAL BURNING PROGRAM.
12058 APTIC NO. 29724

STUDIES ON THE SMOKE DAMAGE OF TREES. (I) ON THE ACUTE DAMAGE SYMPTOMS BY THE SO2.
12607 APTIC NO. 29976

THE EFFECTS OF AIR POLLUTION ON VEGETATION.
12600 APTIC NO. 30003

TRUCKS

EXPERIMENTS WITH ELECTRIC VEHICLES.
11989 APTIC NO. 29886

TREATMENT OF MUNICIPAL TRASH BY SANITATION TRUCK.
12049 APTIC NO. 29979

CAN ADDITIVES DECREASE DIESEL SMOKE? Power, 114(8):60, Aug. 1970.
12122 APTIC NO. 29840

WASTE GAS RECIRCULATION IN COMBUSTION ENGINES, PRIMARILY DIESEL ENGINES.
12181 APTIC NO. 29962

EXHAUST EMISSIONS FROM HEAVY DUTY VEHICLES.
12332 APTIC NO. 27631

TUBERCULOSIS

STUDY ON THE EFFECTS OF AIR POLLUTION ON HUMAN BODY--WITH SPECIAL REFERENCE TO OBJECTIVE, COMPARATIVE STUDY OF ALL THE INHABITANTS BY CHEST X-RAY RINDINGS.
12554 APTIC NO. 29904

TUMORS

ON THE PROBLEM OF THE COMBINED EFFECTS OF SULFUR DIOXIDE AND BENZPYRENE ON THE ORGANISMS OF TEST ANIMALS.
12583 APTIC NO. 29585

TUNNELS

ON THE DIFFUSION OF AUTO-EXHAUSTED GASES.
12464 APTIC NO. 29850

THE PRESENT RESULTS OF DETERMINATIONS OF 3,4-BENZPYRENE IN THE AIR OVER BUDAPEST.
12631 APTIC NO. 29590

TURBIDIMETRY

METHODS OF DETERMINING SULFUR DIOXIDE (REVIEW).
12305 APTIC NO. 29801

TURBULENCE (ATMOSPHERIC)

DISTRIBUTION OF POLLUTION AT SOME COUNTRY SITES.
12425 APTIC NO. 29582

ATMOSPHERIC DISPERSION OF STACK EFFLUENTS.
12458 APTIC NO. 29773

ATMOSPHERIC REACTIONS AND SCAVENGING PROCESSES.
12426 APTIC NO. 29774

ESTIMATION OF GROUND LEVEL CONCENTRATION BY SMOKE-DIFFUSION WIND TUNNELS.
12462 APTIC NO. 29820

TURBULENT DIFFUSION THEORY TAKING TURBULENT BOUNDARY LAYER INTO CONSIDERATION.
12463 APTIC NO. 29822

THE EFFECT OF ATMOSPHERIC CONDITIONS ON PLUME RISE.
12455 APTIC NO. 29865

TVA

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

HYDRODESULFURIZATION OF HEAVY QUALITY OIL, RESIDUAL OIL, ETC.. (Jushitsuyu, zansayu to no suisokadatsuryuho). Text in Japanese. (Ishikawajima-Harima Heavy Industries (Japan)) Japan. Pat. Sho 46-819. 3p., Jan. 9, 1971. (Appl. Dec. 25, 1967, claims not given).
12218 APTIC NO. 29933

ON THE MEASUREMENT AND ABSOLUTE CALIBRATION OF THE STRENGTH OF SOLAR RADIATION ENERGY.
12348 APTIC NO. 29863

LEAD POLLUTION AND PHOTOCHEMICAL SMOG IN TOKYO.
12376 APTIC NO. 29647

INTERNATIONAL CONFERENCE ON CONDENSATION NUCLEI AND ICE-FORMING NUCLEI.
12454 APTIC NO. 29699

FORMATION OF PARTICLES BY PHOTOLYSIS AND RADIOLYSIS.
12407 APTIC NO. 29809

THE STUDY OF THE EVOLUTION OF ATOMIC SIZED PARTICLES IN THE AIR.
12436 APTIC NO. 29946

THE ULTRA-VIOLET PHOTOLYSIS OF OZONE IN THE PRESENCE OF WATER VAPOUR.
12435 APTIC NO. 30012

THE ULTRA-VIOLET PHOTOLYSIS OF OZONE IN THE PRESENCE OF MOLECULAR OXYGEN.
12500 APTIC NO. 29778

THE INFLUENCE OF AIR POLLUTION ON PUBLIC HEALTH.
12586 APTIC NO. 29589

U

ULTRAVIOLET SPECTROMETRY

TENTATIVE METHOD OF ANALYSIS FOR BERYLLIUM CONTENT OF ATMOSPHERIC PARTICULATE MATTER.
12307 APTIC NO. 29487

THE ADIABATIC FLASH PHOTOLYSIS OF NO2 AND SO2.
12259 APTIC NO. 29630

JIS ANALYTICAL PROCESS FOR NITROGEN OXIDES IN WASTE GAS.
12355 APTIC NO. 29677

STUDY OF TRACES OF HEAVY ORGANIC PRODUCTS IN FUEL COMBUSTION GASES. (Etude des traces de produits organiques lourds dans les fumees de combustion de fuel). Text in French. Rev. Gen. Thermique (Paris), 10(111):223-238, March 1971. 90 refs.
12310 APTIC NO. 29766

ENVIRONMENTAL POLLUTION AND ITS MEASUREMENTS (II).
12338 APTIC NO. 29843

SPECTROSCOPIC STUDIES OF PORPHYRINS, PHTHALOCYANINES, AND CS2 IN INERT MATRICES.
12471 APTIC NO. 30050

UNITED STATES

ENVIRONMENTAL POLLUTION CONTROL MEASURES IN WEST EUROPE AND PROBLEMS OF CARBIDE ELECTRIC FURNACE DUST IN JAPAN.
12073 APTIC NO. 29675

DESULFURIZATION OF WASTE GASES AND FUELS.
12205 APTIC NO. 29957

MEASUREMENT OF ATMOSPHERIC LEVELS OF PESTICIDES.
12392 APTIC NO. 29812

EPISODE 104.
12410 APTIC NO. 29695

HOW THE LAWS AND AGENCIES AFFECT YOU.
12641 APTIC NO. 29113

THE PREVENTION OF POLLUTION. PART II-POLLUTION AND THE LAW.
12658 APTIC NO. 29474

A PHILOSOPHY OF INDUSTRIAL AIR POLLUTION CONTROL.
12666 APTIC NO. 29485

LEGAL ASPECTS OF AIR POLLUTION IN BELGIUM AND OTHER NEIGHBORING COUNTRIES.
12659 APTIC NO. 30040

UPPER ATMOSPHERE

POSSIBLE CORRELATION BETWEEN ATMOSPHERIC OZONE CONTENT AND COSMIC RAY INTENSITY VARIATIONS.
12369 APTIC NO. 30031

SOME ASPECTS OF THE METAL ION CHEMISTRY OF THE EARTH'S ATMOSPHERE.
12421 APTIC NO. 28891

MICROSTRUCTURE OF ATMOSPHERIC SURFACE LAYER AEROSOLS.
12433 APTIC NO. 29668

URANIUM COMPOUNDS

SCAVENGING OF SOLUBLE DYE PARTICLES BY RAIN.
12414 APTIC NO. 29708

SCAVENGING OF AEROSOL PARTICLES BY SPRAYS.
12437 APTIC NO. 29711

URBAN AREAS

BUS AND VEHICLE FOR TRANSPORTATION WITH ELECTRIC DRIVE.
11987 APTIC NO. 29517

HEAVY METAL POLLUTION IN THE ONAHAMA INDUSTRIAL AREA. 1ST REPORT. DISTRIBUTION OF HEAVY METALS IN SOIL.
12006 APTIC NO. 29539

INCINERATOR DESIGNED TO ANTICIPATE PROBLEMS.
11994 APTIC NO. 29669

INVESTIGATION OF HEAVY METAL POLLUTION IN IWAKI CITY.
12007 APTIC NO. 29787

THE REMOTE HEATING PLANT IN RECKLINGHAUSEN--A CONTRIBUTION TO THE PROTECTION OF THE ENVIRONMENT.
11990 APTIC NO. 29914

COUNTERMEASURES ON AUTOMOBILE EXHAUST GAS.
12050 APTIC NO. 29935

THE EMISSION AND IMMISSION CONDITIONS OF THE POWER PLANTS IN THE BOEHLENER AREA.
12045 APTIC NO. 30072

ENVIRONMENTAL POLLUTION CONTROL MEASURES IN WEST EUROPE AND PROBLEMS OF CARBIDE ELECTRIC FURNACE DUST IN JAPAN.
12073 APTIC NO. 29675

REPORT ON THE INVESTIGATION INTO THE MAINTENANCE AND THE SUPERVISION OF AIR-CLEANING APPARATUS AS AN INDICATION OF AIR POLLUTION.
12122 APTIC NO. 29840

UTILIZATION OF CATALYST IN AIR POLLUTION CONTROL (5).
12240 APTIC NO. 29898

PLANTS AND POLLUTED AIR.
12230 APTIC NO. 30083

REPORT FOR THE INVESTIGATION ON THE METHOD OF SO2 TEST.
12301 APTIC NO. 29381

ON THE EFFECT OF ACCOMPANYING GASES IN QUANTITATIVE ANALYSIS OF HYDROGEN SULFIDE USING METHYLENE BLUE.
12343 APTIC NO. 29505

MEASUREMENT OF ATMOSPHERIC DUST BY LIGHT SCATTERING METHOD AND HIGH VOLUME SAMPLER METHOD.
12357 APTIC NO. 29864

SMOKE PLUMES MONITORED DAY AND NIGHT. PRACTICAL EXPERIENCE WITH A TV-LASER PLANT IN DUISBURG.
12247 APTIC NO. 30013

ATMOSPHERIC POLLUTION. APPARATUS FOR MEASURING THE CONCENTRATION OF CONDENSATION NUCLEI IN THE ATMOSPHERE.
12267 APTIC NO. 30041

GAS CHROMATOGRAPHY OF REACTIVE SULFUR GASES IN AIR AT THE PARTS- PER-BILLION LEVEL.
12347 APTIC NO. 30065

PLANTS AND SOILS AS INDICATORS OF METALS IN THE AIR.
12281 APTIC NO. 30113

DETERMINATION OF POLYNUCLEAR AROMATICS IN SUSPENDED PARTICLES.
12393 APTIC NO. 29462

ANALYSIS OF HC OF LOW GRADE IN ATMOSPHERE.
12391 APTIC NO. 29482

AIR POLLUTION.
12363 APTIC NO. 29510

STUDY OF THE SUSPENDED PARTICULATES AND LEAD CONCENTRATION IN THE AIR WITHIN THE CITY LIMITS OF MAGDEBURG.
12382 APTIC NO. 29515

A STUDY ON THE ESTIMATION OF THE REGIONAL CENTRAL VALUE OF AIR POLLUTION FROM OBSERVED VALUES.
12383 APTIC NO. 29518

AIR POLLUTION BY EXHAUST GAS II. DETERMINATION OF LEAD AND CARBON MONOXIDE INSIDE A GARAGE AND A REPAIR FACTORY IN TOKYO CITY.
12397 APTIC NO. 29576

INCIDENCE OF RHODOTORULA SPECIES IN URBAN AIR.
12395 APTIC NO. 29637

LEAD POLLUTION AND PHOTOCHEMICAL SMOG IN TOKYO.
12376 APTIC NO. 29647

TEN YEARS OF AIR POLLUTION IN HOKKAIDO.
12367 APTIC NO. 29727

A REPORT OF THE PERIODIC MEASUREMENT OF SOOT AND DUST, AND SULFUR OXIDES IN THE AIR AROUND THE HOSPITAL.
12381 APTIC NO. 29794

MEASUREMENT OF ATMOSPHERIC LEVELS OF PESTICIDES.
12392 APTIC NO. 29812

LEAD CONCENTRATION IN YOKOHAMA AIR.
12399 APTIC NO. 29814

SUSPENDED PARTICULATES IN OSAKA CITY.
12375 APTIC NO. 29853

REGISTRATION OF THE SULPHUR DIOXIDE CONTENT OF THE AIR IN BUDAPEST.
12394 APTIC NO. 29868

ON AIR POLLUTION IN MIZUSHIMA AREA.
12390 APTIC NO. 29895

CLEANER AIR IN LONDON.
12377 APTIC NO. 29912

DISTRIBUTION OF LEAD IN THE AIR NEAR CITY ROADS.
12388 APTIC NO. 29918

POLLUTIONS AND TOKYO METROPOLITAN GOVERNMENT.
12365 APTIC NO. 29973

SEASONAL VARIATION OF THE CONCENTRATION OF HEAVY METALS IN SUSPENDED DUST ON THE MAIN STREETS.
12384 APTIC NO. 30025

CONCASTER, AN AREA STUDY.
12366 APTIC NO. 30047

THE TENDENCY OF AIR POLLUTION AT NAGOYA CITY OBSERVED FROM THE WEIGHT OF FALLING DUST.
12396 APTIC NO. 30076

EVOLUTION OF THE ATMOSPHERIC CONTAMINATION IN MADRID IN 1969.
12371 APTIC NO. 30089

PROBLEMS OF AIR POLLUTION AND MEASURES TO COMBAT IT IN EL PASO, TEXAS.
12368 APTIC NO. 30094

EPISODE 104.
12410 APTIC NO. 29695

EVALUATION TRIALS OF URBAN AIR POLLUTION MODELS.
12439 APTIC NO. 29697

ATMOSPHERIC REACTIONS AND SCAVENGING PROCESSES.
12426 APTIC NO. 29774

DISSIPATION AND PRECIPITATION OF DUST EMITTED BY A STEELWORKS.
12466 APTIC NO. 29829

AIR POLLUTION IN AN URBAN ENVIRONMENT.
12413 APTIC NO. 30045

ATTACHMENT OF TRACE SUBSTANCES ON ATMOSPHERIC AEROSOLS.
12409 APTIC NO. 30046

ON PLUMBIC POLLUTION OF MUNICIPAL ATMOSPHERE--BEHAVIORS OF PLUMBIC COMPOUND AS AEROSOL.
12431 APTIC NO. 30073

BORDEAUX. STUDY OF ATMOSPHERIC POLLUTION IN THE BUILT-UP AREA.
12420 APTIC NO. 30109

PULMONARY COMPLICATIONS OF ASBESTOS EXPOSURE.
12552 APTIC NO. 29221

PATHOLOGICAL STUDY ON THE EXPERIMENTAL RABBITS AT AIR-POLLUTED AREA IN YOKKAICHI.
12590 APTIC NO. 29502

ON THE RELATIONSHIP BETWEEN AIR POLLUTION AND MORBIDITY AND MORTALITY OF THE POPULATION IN POLISH TOWNS.
12563 APTIC NO. 29575

THE RESEARCH FOR THE EFFECTS OF AIR POLLUTION ON THE HUMAN BODY. (II) THE RELATIONSHIP BETWEEN ASTHMA-LIKE DISEASES OF THE SCHOOL CHILDREN AND AIR POLLUTION IN KITAKYUSHU.
12524 APTIC NO. 29683

LEAD MEN HEADING TOWARD DESTRUCTION--SPREADING OMINOUS METAL POLLUTIONS.
12569 APTIC NO. 29789

EFFECTS OF SOOT AND SMOKE ON THE HEALTH OF SCHOOL CHILDREN.
12556 APTIC NO. 29791

SOME RECENT TOPICS IN AIR POLLUTION AND HEALTH IN LONDON.
12562 APTIC NO. 29882

THE STUDY OF THE POLLUTED AIR INFLUENCE ON CHILDREN S HEALTH IN RUHRDISTRICT.
12544 APTIC NO. 29899

STUDY ON THE EFFECTS OF AIR POLLUTION ON HUMAN BODY--WITH SPECIAL REFERENCE TO OBJECTIVE, COMPARATIVE STUDY OF ALL THE INHABITANTS BY CHEST X-RAY RINDINGS.
12554 APTIC NO. 29904

STUDIES ON AIR POLLUTION AND BRONCHIAL ASTHMA. REPORT 1.
12548 APTIC NO. 29925

EFFECTS OF ATMOSPHERIC LEAD ON TRAFFIC POLICEMEN IN A MEDIUM SIZED CITY.
12566 APTIC NO. 29958

ATMOSPHERIC POLLUTIONS AND HEALTH.
12537 APTIC NO. 29971

ON THE STUDY OF ALLERGIC REACTIONS IN CONNECTION WITH AIR POLLUTION IN SETTLEMENTS WITH INDUSTRIAL DISCHARGES.
12528 APTIC NO. 29981

ADDITION OF LEAD TO FUEL - HARMFUL OR DANGEROUS? (Bleizusaetze im Kraftstoff - harmlos oder gefaehrlich)? Text in German. VDI (Ver. Deut. Ingr.) Nachr. (Berlin), 25(9):6, 1971.
12527 APTIC NO. 30000

CARBON MONOXIDE AND SURVIVAL FROM MYOCARDIAL INFARCTION.
12541 APTIC NO. 30127

ON DAMAGE TO PLANTS BY FLUORIDES IN EXHAUST GAS FROM TILE MANUFACTURING FACTORY.
12606 APTIC NO. 29597

COLLECTED PHOTOGRAPHS DEMONSTRATING PLANT DAMAGE BY AIR POLLUTION.
12591 APTIC NO. 29924

RELATION BETWEEN INDUSTRIALIZATION AND THE DISTRIBUTION AND GROWTH OF EPIPHYTIC LICHENS AND MOSSES IN MONTREAL.
12602 APTIC NO. 29998

CORROSION RATES OF MILD STEEL IN COASTAL, INDUSTRIAL, AND INLAND AREAS OF NORTHERN CALIFORNIA.
12620 APTIC NO. 28810

AIR POLLUTION AND ATMOSPHERIC CORROSION.
12613 APTIC NO. 29222

THE INFLUENCE OF AIR POLLUTION UPON THE DISCOLORATION OF THE DYED STUFF AND THE DECREASE OF TENSILE STRENGTH OF SOME FIBERS.
12612 APTIC NO. 29717

THE GUIDANCE STANDARD OF THE EQUIPMENT FOR TREATING EXHAUST GASES FROM THE FACTORY (FORMALDEHYDE):APR. 1970.
12636 APTIC NO. 29756

CONTINUOUS MEASUREMENT SYSTEM OF ATMOSPHERIC POLLUTION AT THE MOUTH OF THE RHINE, NEAR ROTTERDAM.
12645 APTIC NO. 29696

EXPANSION AND STRENGTHENING OF AIR POLLUTION CONTROL COUNTERMEASURES.
12671 APTIC NO. 29495

ADDENDUM TO ENVIRONMENTAL POLLUTIONS IN KAWASAKI CITY.
12647 APTIC NO. 29511

PRESENT SITUATION OF ADMINISTRATION CONCERNING POLLUTIONS.
12648 APTIC NO. 29598

POLLUTIONS PREVENTION PLAN FOR CHIBA AND ICHIHARA CITIES IN CHIBA PREFECTURE.
12650 APTIC NO. 29813

SOME RECENT TOPICS IN AIR POLLUTION AND HEALTH IN NEW YORK.
12668 APTIC NO. 29817

MATERIALS FOR REFERENCE ABOUT ENVIRONMENTAL POLLUTION CONTROL.
12651 APTIC NO. 29818

FEDERALISM MAKES ENVIRONMENTAL PROTECTION DIFFICULT.
12654 APTIC NO. 29969

LONG RANGE PLANNING IN AIR RESOURCE MANAGEMENT.
12657 APTIC NO. 30056

NOBODY BREATHES FRESH AIR. FACTS AND ARGUMENTS ABOUT AIR POLLUTION.
12677 APTIC NO. 29459

CHANGE IN POLLUTANTS AND FUTURE PROBLEMS.
12680 APTIC NO. 29743

URINALYSIS

THE ANALYSIS OF MERCURY IN URINE, BLOOD, WATER, AND AIR.
12306 APTIC NO. 29652

PARALLEL DETERMINATION OF NICKEL AND COBALT IN URINE AND ATMOSPHERE.
12300 APTIC NO. 29955

PROGRESS REPORT. JANUARY-DECEMBER 1969.
12555 APTIC NO. 28850

LEAD IN THE ENVIRONMENT.
12564 APTIC NO. 29493

INTRODUCTION AND GENERAL DESCRIPTION OF THE STUDY AND OF THE PROCEDURES FOR PROLONGED EXPOSURE TO CARBON MONOXIDE AND HYPOXIA.
12530 APTIC NO. 29503

STUDIES ON THE INFLUENCE OF AIR POLLUTION ON THE HEALTH OF THE PEOPLE AT BELOSLAV, DISTRICT OF VARNA, PEOPLE S REPUBLIC OF BULGARIA.
12557 APTIC NO. 29573

ON THE PROBLEM OF THE COMBINED EFFECTS OF SULFUR DIOXIDE AND BENZPYRENE ON THE ORGANISMS OF TEST ANIMALS.
12583 APTIC NO. 29585

INFLUENCE OF PROLONGED CARBON MONOXIDE EXPOSURE AND HIGH ALTITUDE ON THE COMPOSITION OF BLOOD AND URINE IN MAN.
12559 APTIC NO. 29613

ITAI-ITAI (OUCH-OUCH) DISEASE AND CADMIUM POLLUTION IN JAPAN.
12581 APTIC NO. 29673

RENAL FUNCTION DURING PROLONGED EXPOSURE TO HYPOXIA AND CARBON MONOXIDE. II. ELECTROLYTE HANDLING.
12577 APTIC NO. 29885

BIOLOGICAL MONITORING GUIDES. FLUORIDES.
12525 APTIC NO. 29887

SOME PLANS FOR FUTURE STUDIES FOR LOW LEVEL OF LEAD ON THE HUMAN BEING.
12553 APTIC NO. 29815

AIR POLLUTION BY TRACE METALS IN JAPAN.
12561 APTIC NO. 29816

FOUR-ALKYL LEAD AND ENVIRONMENTAL POLLUTION.
12588 APTIC NO 29825

EFFECTS OF ATMOSPHERIC LEAD ON TRAFFIC POLICEMEN IN A MEDIUM SIZED CITY.
12566 APTIC NO. 29958

CRITERIA OF INJURIOUSNESS AS THE BASIS OF STANDARDS OF THE HYGIENE OF THE AIR
12642 APTIC NO. 29574

USSR

DECONTAMINATION OF POLLUTED AIR FROM HARD PITCH PRODUCTION PLANT.
12022 APTIC NO. 30026

OXIDATION OF SODIUM SULFIDE AND MERCAPTIDE IN BLACK LIQUOR.
12071 APTIC NO. 29278

REMOVAL OF CHLORINE FROM GASES.
12177 APTIC NO. 29802

CATALYTIC OXIDATION OF CARBON MONOXIDE IN THE PRESENCE OF RECENTLY SYNTHESIZED PLATINUM COMPLEXES.
12117 APTIC NO. 29896

RESISTANCE OF PHASES INVOLVED IN MASS TRANSFER DURING ABSORPTION OF A READILY SOLUBLE GAS IN A VENTURI SCRUBBER
12188 APTIC NO. 29968

USE OF VANADIUM CATALYSTS IN PURIFYING INDUSTRIAL WASTE GASES FROM SULFUR DIOXIDE.
12087 APTIC NO. 29980

HIGH-CONCENTRATION SULFUR DIOXIDE FROM CALCINING PYRITES IN THE DKSM FURNACE.
12157 APTIC NO. 29982

INFRARED SPECTROSCOPIC STUDY OF THE CATALYTIC OXIDATION OF CARBON MONOXIDE TO CARBON DIOXIDE ON MANGANESE DIOXIDE.
12105 APTIC NO. 30091

FILTER FOR COLLECTING CARBON BLACK.
12130 APTIC NO. 30104

EXPERIMENTAL INVESTIGATION OF THE PROCESS OF CENTRIFUGAL DUST SEPARATION.
12245 APTIC NO. 30133

NEW METHODS OF DETERMINING AIR POLLUTION.
12316 APTIC NO. 29595

AN ASPIRATION INSTALLATION OF HIGH EFFICIENCY FOR COLLECTING SAMPLES OF RADIOACTIVE AEROSOLS FROM THE ATMOSPHERE.
12318 APTIC NO. 29670

AN AUTOMATIC COULOMETRIC ANALYZER OF OZONE IN THE ATMOSPHERE.
12274 APTIC NO. 29757

METHODS OF DETERMINING SULFUR DIOXIDE (REVIEW).
12305 APTIC NO. 29881

DETERMINATION OF RUTIN AEROSOL IN THE AIR.
12329 APTIC NO. 29886

ANALYSIS OF MONOETHANOLAMIN IN THE AIR.
12339 APTIC NO. 29970

DETECTION OF THE TOTAL AMOUNT OF ORGANIC SUBSTANCES IN THE DISCHARGED AIR FROM THE PRODUCTION OF SYNTHETIC FATTY ACIDS.
12334 APTIC NO. 29983

DEVELOPMENT OF A METHOD FOR DETERMINING SULPHUR OXIDES IN FLUE GASES.
12265 APTIC NO. 30084

CALCULATION METHODS OF SPECTRAL ABSORPTION OF INFRARED RADIATION BY ATMOSPHERIC GASES.
12323 APTIC NO. 30103

FORMATION OF FOG ON THE NUCLEI OF HUMIDITY CONDENSATION.
12453 APTIC NO. 29636

ON THE DEPOSITION OF MATTER ON SPHERICAL AEROSOL PARTICLES IN THE RANGE OF INTERMEDIATE KNUDSEN NUMBERS.
12405 APTIC NO. 29667

MICROSTRUCTURE OF ATMOSPHERIC SURFACE LAYER AEROSOLS.
12433 APTIC NO. 29668

PHOTOCHEMICAL SMOG.
12418 APTIC NO. 29672

AN EXPERIMENTAL STUDY OF PHOTOCHEMICAL OXIDATION OF ORGANIC SUBSTANCES IN THE ATMOSPHERE.
12441 APTIC NO. 29681

INTERNATIONAL CONFERENCE ON CONDENSATION NUCLEI AND ICE-FORMING NUCLEI.
12454 APTIC NO. 29699

TRACE ELEMENTS IN ATMOSPHERIC PRECIPITATION AROUND THE OTKAZNOE RESERVOIR.
12432 APTIC NO. 29910

EXPLOSIVE OXIDATION OF NITROUS OXIDE MIXED WITH OZONE.
12511 APTIC NO. 27268

IGNITION KINTICS IN HIGH-TEMPERATURE OXIDATION WITH NITROUS OXIDE IN SHOCK WAVES.
12509 APTIC NO. 29895

THE REACTION OF OZONE WITH SOLID POLYSTYRENE.
12505 APTIC NO. 29666

METHOD OF CALCULATING EQUILIBRIUM COMPOSITIONS IN INTERACTION OF NITROGEN OXIDES WITH NITRIC ACID SOLUTIONS.
12470 APTIC NO. 29880

HETEROGENEOUS CATALYSIS INVOLVING ASTOICHIOMETRIC COMPONENTS. IV. INITIATION EFFECTS OF CARBON MONOXIDE AND OXYGEN OXIDE IN THE HYDROPOLYMERIZATION OF PROPENE AND ISOBUTENE.
12488 APTIC NO. 29871

EXPERIMENTAL FUNCTIONS OF INTEGRAL ABSORPTION IN H2O, AND CO2, N2O, CH4, CO, NO VAPOUR BANDS.
12502 APTIC NO. 29964

CALCULATION OF A JET AXIS IN A DRIFTING FLOW.
12507 APTIC NO. 30042

DETERMINATION OF THE DISPERSION OF SCATTERING NEAR THE CRITICAL POINT USING THE SCATTERED LIGHT INDICATRIX.
12499 APTIC NO. 30051

ON THE PROBLEM OF THE COMBINED EFFECTS OF SULFUR DIOXIDE AND BENZPYRENE ON THE ORGANISMS OF TEST ANIMALS.
12563 APTIC NO. 29985

EFFECT OF LONG-TERM JOINT ACTION OF CARBON MONOXIDE, NITROGEN DIOXIDE AND AMMONIUM ON REQUIREMENTS OF ALBINO RATS IN VITAMIN B6.
12572 APTIC NO. 29733

ATMOSPHERIC POLLUTIONS AND HEALTH.
12537 APTIC NO. 29971

ON THE STUDY OF ALLERGIC REACTIONS IN CONNECTION WITH AIR POLLUTION IN SETTLEMENTS WITH INDUSTRIAL DISCHARGES.
12528 APTIC NO. 29981

DEGRADATION OF POLYMERS IN REACTIVE GASES.
12617 APTIC NO. 29472

CRITERIA OF INJURIOUSNESS AS THE BASIS OF STANDARDS OF THE HYGIENE OF THE AIR.
12642 APTIC NO. 29574

THE TASKS OF THE PUBLIC HYGIENE SYSTEM OF THE USSR IN THE FIELD OF THE PURIFICATION OF THE AIR.
12665 APTIC NO. 29594

STATE AND INSPECTION OF PROTECTION OF ATMOSPHERE AND LEGAL REGULATIONS VALID TODAY.
12664 APTIC NO. 29828

V

VALLEYS
THE EFFECTS OF LOW LEVEL FLUORINE POLLUTION IN A MOUNTAIN VALLEY.
12595 APTIC NO. 29991

VANADIUM
CONTACT HYDRODESULFURIZATION OF PETROLEUM RESIDUAL OIL.
12200 APTIC NO. 29932

VANADIUM COMPOUNDS
ELECTRIC DUST COLLECTION DEVICE.
12151 APTIC NO. 29819

DIRECT DESULFURIZATION OF HEAVY OIL.
12111 APTIC NO. 29908

METHOD TO MANUFACTURE CATALYST FOR CLEANING OF EXHAUST GAS FROM INTERNAL COMBUSTION ENGINES.
12130 APTIC NO. 29937

CATALYST FOR HEAVY OIL DESULFURIZATION.
12226 APTIC NO. 29977

USE OF VANADIUM CATALYSTS IN PURIFYING INDUSTRIAL WASTE GASES FROM SULFUR DIOXIDE.
12087 APTIC NO. 29980

SUMMARY OF H2SO4 MANUFACTURE.
12068 APTIC NO. 30009

TRACE ELEMENTS IN ATMOSPHERIC PRECIPITATION AROUND THE OTKAZNOE RESERVOIR.
12432 APTIC NO. 29910

PROBLEMS IN INDUSTRIAL POWER PLANTS.
12618 APTIC NO. 29936

VAPOR PRESSURE
CONTROL OF ATMOSPHERIC EMISSIONS FROM PETROLEUM STORAGE TANKS.
12063 APTIC NO. 29889

STUDY ON THE DESULFURIZATION OF FLUE GAS BY THE USE OF DRY LIME.
12195 APTIC NO. 29972

DISPOSAL OF HC FROM OIL CONTAINING RESIDUAL OIL AFTER DISTILLATION USING HYDROGEN.
12162 APTIC NO. 30005

REDUCTION OF MAGNESIUM SULFHATE BY CARBON MONOXIDE.
12098 APTIC NO. 29943

OXYGEN AFFINITY AND ACID-BASE STATUS OF HUMAN BLOOD DURING EXPOSURE TO HYPOXIA AND CARBON MONOXIDE.
12567 APTIC NO. 29528

VAPOR RECOVERY SYSTEMS
ONE ANSWER TO PLASTICIZER POLLUTION.
11991 APTIC NO. 30028

FUEL VAPOR ADSORBING APPARATUS.
12169 APTIC NO. 27562

VAPORS
ONE ANSWER TO PLASTICIZER POLLUTION.
11991 APTIC NO. 30028

EXHAUST GAS CLEANER FOR DIESEL ENGINES.
12221 APTIC NO. 29533

CO BOILER OF FLUIDIZED BED TYPE CATALYTIC CRACKING PROCESS PRODUCIN NO LEAD GASOLINE.
12237 APTIC NO. 29535

STEAM-SMOKE MIST CONTACT DEVICE.
12174 APTIC NO. 29792

CONTROL OF ATMOSPHERIC EMISSIONS FROM PETROLEUM STORAGE TANKS.
12063 APTIC NO. 29889

BALL BLANKETS FOR EFFLUENT TREATMENT.
12083 APTIC NO. 30034

ELIMINATION OF OXIDES CONTAINED IN CERTAIN RESIDUAL INDUSTRIAL GASES.
12129 APTIC NO. 30043

FLAME PHOTOMETRIC DETECTION OF VOLATILE SULPHUR COMPOUNDS IN SMOKE FROM VARIOUS TYPES OF CIGARETTES.
12283 APTIC NO. 29874

MERCURY IN THE AIR.
12362 APTIC NO. 29490

INTERPRETATION OF RESULTS OF EXAMINATION OF AIR.
12306 APTIC NO. 29545

THE ULTRA-VIOLET PHOTOLYSIS OF OZONE IN THE PRESENCE OF WATER VAPOUR.
12435 APTIC NO. 30012

EXPERIMENTAL FUNCTIONS OF INTEGRAL ABSORPTION IN H2O, AND CO2, N2O, CH4, CO, NO VAPOUR BANDS.
12502 APTIC NO. 29964

PHOTOLYSIS OF THIOLANE VAPOR.
12478 APTIC NO. 30115

EXPERIMENTAL STUDIES ON THE EFFECT OF SMALL DOSES OF LEAD AND SULFUR DIOXIDE.
12532 APTIC NO. 29588

THE ECONOMIC IMPORTANCE OF HEAT RECOVERY FROM HOUSEHOLD REFUSE INCINERATORS.
12625 APTIC NO. 29992

VEGETABLES
EXAMINATION OF QUANTITATIVE ANALYSIS METHOD OF FLUORINE IN VEGETABLE SAMPLES.
12302 APTIC NO. 29467

THE GAS CHROMATOGRAPHIC DETERMINATION OF PESTICIDES. (PART 3) DETERMINATION OF RESIDUES OF ORGANOPHOSPHORUS PESTICIDES.
12349 APTIC NO. 30134

EFFECT OF AIR AND WATER POLLUTION ON AGRICULTURAL PRODUCTS BY CD, PB, ZN ATTRIBUTED TO MINE REFINERY IN ANNAKA CITY, GUNMA PREFECTURE.
12691 APTIC NO. 27489

AIR POLLUTION OXIDANTS - THEIR EFFECTS ON METABOLIC PROCESSES IN PLANTS.
12598 APTIC NO. 29524

ON DAMAGE TO PLANTS BY FLUORIDES IN EXHAUST GAS FROM TILE MANUFACTURING FACTORY.
12606 APTIC NO. 29597

ON COMPOSITE HARM TO PLANTS BY SULFUROUS ACID GAS AND OXIDANT.
12604 APTIC NO. 29671

ETHYLENE PRODUCTION FROM OZONE INJURED PLANTS.
12596 APTIC NO. 30059

ABSCISSION: THE PHYTOGERONTOLOGICAL EFFECTS OF ETHYLENE.
12592 APTIC NO. 30060

VENTILATION
NITROGEN DIOXIDE.
11988 APTIC NO. 29567

MEASUREMENT DATA OBTAINED FROM EXPERIMENTS WITH THE DYNAVANE HIGH CAPACITY DRY TYPE DUST SEPARATOR.
12108 APTIC NO. 28791

VENTILATION AND EXPLOSION EXPERIMENTS IN A WATER-TUBE BOILER OF A POWER PLANT.
12091 APTIC NO. 29514

MEASURES TAKEN BY THE REGIONAL SOCIAL SECURITY ADMINISTRATION OF LIMOGES TO REDUCE THE RISKS OF SILICOSIS.
12171 APTIC NO. 29561

ON PUBLIC NUISANCE BY, AND ENVIRONMENTAL HYGIENE OF, PAINT MANUFACTURING INDUSTRY.
12059 APTIC NO. 29761

STUDIES OF VENTILATORY MEASURES INDOORS AGAINST POLLEN ALLERGY.
12116 APTIC NO. 30011

ON DOUBLE HEAD-CUT CONES TYPE CENTRIFUGAL DUST COLLECTOR.
12148 APTIC NO. 30070

INTERPRETATION OF RESULTS OF EXAMINATION OF AIR.
12386 APTIC NO. 29545

ON THE DIFFUSION OF AUTO-EXHAUSTED GASES.
12464 APTIC NO. 29850

CASTING WORK ENVIRONMENTS AND PUBLIC NUISANCE.
12655 APTIC NO. 29975

VENTILATION (PULMONARY)

CIRCULATION, METABOLISM, AND VENTILATION DURING PROLONGED EXPOSURE TO CARBON MONOXIDE AND TO HIGH ALTITUDE.
12560 APTIC NO. 29869

SOME HEALTH SURVEY RESULTS OF UNDERGROUND GARAGE WORKERS.
12568 APTIC NO. 30074

VENTURI SCRUBBERS

INCINERATOR DESIGNED TO ANTICIPATE PROBLEMS.
11994 APTIC NO. 29669

HEAT EXTRACTION AIDS DEPOLLUTION OF GASES AND WATER IN CHEVROLET FOUNDRY.
12097 APTIC NO. 29523

POLLUTION TECHNOLOGY--WHAT THEY RE DOING OVERSEAS.
12244 APTIC NO. 29650

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

TECHNOLOGY RENDERS ITS SERVICES TO AIR PURIFICATION AND NOISE SUPPRESSION AS PART OF ENVIRONMENTAL HYGIENE.
12227 APTIC NO. 29725

DEVELOPMENT OF GAS PURIFICATION INSTALLATIONS FOR ELECTRIC MELTING FURNACES.
12204 APTIC NO. 29740

ALKALI AND HEAT RECOVERY IN THE FLUE GASES FROM RECOVERY BOILERS.
12193 APTIC NO. 29852

THE NEW DUPLEX IRON MELTING PLANT AT THE M. BUSCH KG IN WEHRSTAPEL.
12094 APTIC NO. 29861

RESISTANCE OF PHASES INVOLVED IN MASS TRANSFER DURING ABSORPTION OF A READILY SOLUBLE GAS IN A VENTURI SCRUBBER.
12188 APTIC NO. 29968

SULFURIC ACID, SO2 DEVELOPMENTS: REMOVING SO2 AND ACID MIST WITH VENTURI SCRUBBERS.
12209 APTIC NO. 30080

LEAD SMELTING PLANT CONTROLS AIR EMISSIONS.
12069 APTIC NO. 30124

VIRUSES

AIRBORNE INFLUENZA PR8-A VIRUS INFECTIONS IN ACTIVELY IMMUNIZED MICE.
12167 APTIC NO. 29718

STUDIES OF THE SIGNIFICANCE OF DUSTS AND GASES FOR THE PATHOLOGY OF INFECTIONS OF THE RESPIRATORY TRACT.
12529 APTIC NO. 29571

VISIBILITY

DEVELOPMENT OF A METEOROLOGICALLY CONTROLLED AGRICULTURAL BURNING PROGRAM.
12058 APTIC NO. 29724

MEASUREMENT OF ATMOSPHERIC DUST BY LIGHT SCATTERING METHOD AND HIGH VOLUME SAMPLER METHOD.
12357 APTIC NO. 29864

A COMPREHENSIVE SAMPLING SYSTEM FOR STUDYING THE RELATION BETWEEN VISIBILITY, METEOROLOGICAL PARAMETERS AND ATMOSPHERIC POLLUTION.
12276 APTIC NO. 30082

MICROSTRUCTURE OF ATMOSPHERIC SURFACE LAYER AEROSOLS.
12433 APTIC NO. 29668

PROGRESS REPORT. JANUARY-DECEMBER 1969.
12555 APTIC NO. 28850

VISIBLE RADIATION

TRIAL CONSTRUCTION OF NON-DISPERSION TYPE VISIBLE LIGHT GAS ANALYZE AND DETERMINATION OF NITROGEN DIOXIDE, CHLORINE, AND BROMINE.
12303 APTIC NO. 29762

ON THE MEASUREMENT AND ABSOLUTE CALIBRATION OF THE STRENGTH OF SOLAR RADIATION ENERGY.
12348 APTIC NO. 29863

VOLATILITY

THE CALCULATION OF MIXED HYDROCARBON-OXYGENATED SOLVENT EVAPORATION.
12038 APTIC NO. 29526

PESTICIDES IN AIR. VOLATILIZATION OF SOIL-APPLIED DDT AND DDD FROM FLOODED AND NONFLOODED PLOTS.
12047 APTIC NO. 29620

ON DISPOSAL OF PLASTIC WASTES (PVC) BY FLUID LAYER OF MEDIUM.
12074 APTIC NO. 29449

POLLUTION REGULATIONS AND THEIR EFFECT ON VEHICLE PREPARATION.
12112 APTIC NO. 29659

COMBUSTION OF WASTES CENTERING AROUND REMOVAL OF NOXIOUS GAS.
12077 APTIC NO. 29985

GC-MS ANALYSIS OF THE SEMI-VOLATILES OF CIGARETTE SMOKE.
12282 APTIC NO. 29660

ON DAMAGE TO PLANTS BY FLUORIDES IN EXHAUST GAS FROM TILE MANUFACTURING FACTORY.
12606 APTIC NO. 29597

VOLTAGE

ON REGENERATION OF ACTIVATED CARBON HAVING ADSORBED SO2.
12173 APTIC NO. 29732

LAB TESTS SHOW ELECTRIC FIELD MIGHT HELP REDUCE ENGINE KNOCK.
12088 APTIC NO. 30036

A GAS ANALYSER FOR THE MEASUREMENT OF IMPURITIES IN AIR.
12277 APTIC NO. 29581

TRIAL CONSTRUCTION OF NON-DISPERSION TYPE VISIBLE LIGHT GAS ANALYZE AND DETERMINATION OF NITROGEN DIOXIDE, CHLORINE, AND BROMINE.
12303 APTIC NO. 29762

ELECTROSTATIC FILTER USING DIELECTRIC FILTER MATERIAL.
12515 APTIC NO. 29596

W

WASHINGTON D C

CARBON MONOXIDE IN RAINWATER.
12460 APTIC NO. 29880

WASHOUT

SCAVENGING IN PERSPECTIVE.
12422 APTIC NO. 29688

SCAVENGING OF SOLUBLE DYE PARTICLES BY RAIN.
12414 APTIC NO. 29708

COLLECTION EFFICIENCY IN WASHOUT BY RAIN.
12406 APTIC NO. 29710

SCAVENGING OF AEROSOL PARTICLES BY SPRAYS.
12437 APTIC NO. 29711

ATMOSPHERIC REACTIONS AND SCAVENGING PROCESSES.
12426 APTIC NO. 29774

EFFECT OF SOLUBILITIES OF GASES ON THEIR SCAVENGING BY RAINDROPS.
12442 APTIC NO. 29780

WATER

HEAT EXTRACTION AIDS DEPOLLUTION OF GASES AND WATER IN CHEVROLET FOUNDRY.
12097 APTIC NO. 29523

EXHAUST GAS CLEANER FOR DIESEL ENGINES.
12221 APTIC NO. 29533

METHOD TO REMOVE HARMFUL SUBSTANCES FROM STACK GAS BY-PRODUCING AMMONIUM SULFATE AND OTHERS (XV) - ACTIVATION ENERGY OF ACTIVATED CARBON FOR SO2 ADSORPTION.
12161 APTIC NO. 29648

THE NEW DUPLEX IRON MELTING PLANT AT THE M. BUSCH KG IN WEHRSTAPEL.
12094 APTIC NO. 29861

METHOD TO MANUFACTURE CATALYST FOR DESULFURIZATION BY HYDROGEN ADDITION OF LIQUID HYDROCARBON.
12234 APTIC NO. 29974

THE ANALYSIS OF MERCURY IN URINE, BLOOD, WATER, AND AIR.
12306 APTIC NO. 29652

DETERMINATION OF ORGANICALLY BOUND CARBON IN MOIST WASTE GASES.
12345 APTIC NO. 29839

FRACTIONATION OF OXYGEN ISOTOPES BETWEEN NO AND H20.
12297 APTIC NO. 30114

COLLECTION EFFICIENCY OF WATER DROPLETS IN AGCL AEROSOL.
12430 APTIC NO. 29687

SCAVENGING OF AEROSOL PARTICLES BY SPRAYS.
12437 APTIC NO. 29711

CONTINUOUS CHARGED CLOUD-PARTICLE SAMPLER.
12451 APTIC NO. 29712

THE ULTRA-VIOLET PHOTOLYSIS OF OZONE IN THE PRESENCE OF WATER VAPOUR.
12435 APTIC NO. 30012

EXPERIMENTAL FUNCTIONS OF INTEGRAL ABSORPTION IN H2O, AND CO2, N2O, CH4, CO, NO VAPOUR BANDS.
12502 APTIC NO. 29964

FURTHER STUDIES ON THE EFFECT OF SULPHUR DIOXIDE ON LICHENS AND BRYOPHYTES.
12599 APTIC NO. 29645

WATER POLLUTION

MERCURY IN THE ENVIRONMENT.
11992 APTIC NO. 29489

CONSIDERATIONS IN THE CONSTRUCTION OF LARGE REFUSE INCINERATORS.
12026 APTIC NO. 29547

AMMONIA DISPOSAL--COKE PLANTS.
12012 APTIC NO. 29627

A NEW ENVIRONMENTAL POLLUTANT - POLYCHLORINATED BIPHENYLS (PCB).
12044 APTIC NO. 29984

POLLUTION TECHNOLOGY--WHAT THEY RE DOING OVERSEAS.
12244 APTIC NO. 29650

POLLUTION CONTROL AT THE SAGAMIHARA PLANT OF OUR TOKYO MACHINERY WORKS.
12199 APTIC NO. 29821

ACTIVATED CARBON INDUSTRY AND PROBLEMS IN FUTURE - SPHERICAL ACTIVATED CARBON FROM COAL.
12235 APTIC NO. 29942

LEAD SMELTING PLANT CONTROLS AIR EMISSIONS.
12069 APTIC NO. 30124

THE PREVENTION OF POLLUTION.
12416 APTIC NO. 29623

ON HYGIENIC AND TOXICOLOGICAL PROBLEMS OF POLLUTION BY ARSENIC.
12534 APTIC NO. 29507

ITAI-ITAI (OUCH-OUCH) DISEASE AND CADMIUM POLLUTION IN JAPAN.
12581 APTIC NO. 29673

AIR POLLUTION BY TRACE METALS IN JAPAN.
12561 APTIC NO. 29816

EFFECT OF AIR AND WATER POLLUTION ON AGRICULTURAL PRODUCTS BY CD, PB, ZN ATTRIBUTED TO MINE REFINERY IN ANNAKA CITY, GUNMA PREFECTURE.
12601 APTIC NO. 27489

THE PREVENTION OF POLLUTION. PART II-POLLUTION AND THE LAW.
12658 APTIC NO. 29474

ON THE BASIC LAW FOR ENVIRONMENTAL POLLUTION CONTROL, NOISE CONTROL LAW, WATER POLLUTION PREVENTION LAW, AND AIR POLLUTION PREVENTION LAW.
12670 APTIC NO. 29509

TOKYO FIGHTS POLLUTION. AN URGENT APPEAL FOR REFORM.
12653 APTIC NO. 29688

ENVIRONMENT PRESERVATION - FROM THE ECOLOGICAL POINT OF VIEW.
12678 APTIC NO. 29961

WEATHER FORECASTING

EXPERIMENTS WITH A REGIONAL FINE-MESH PREDICTION MODEL.
12465 APTIC NO. 30107

WEST AND GAEKE METHOD

INVESTIGATION ON THE MEASURING ERRORS OF CONDUCTOMETRIC SULFUR DIOXIDE ANALYZER USED FOR AIR POLLUTION MONITOR.
12356 APTIC NO. 29398

PROGRESS IN MEASUREMENT OF AIR POLLUTION.
12350 APTIC NO. 29748

DETERMINATION AND EVALUATION OF LOW CONCENTRATIONS OF INDUSTRIAL AIR POLLUTANTS.
12309 APTIC NO. 30014

WET CYCLONES

STUDY OF DUSTINESS AND PURIFICATION OF AIR IN A QUARRY.
12128 APTIC NO. 29562

POLLUTION TECHNOLOGY--WHAT THEY RE DOING OVERSEAS.
12244 APTIC NO. 29650

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
12085 APTIC NO. 29680

PURIX WET COLLECTOR FOR WASTE GAS CLEANING.
12060 APTIC NO. 29767

THE PROBLEM OF INDUSTRIAL DUST: WAYS TO REGULATE ITS COLLECTION.
12099 APTIC NO. 29990

WETTING

STEAM-SMOKE MIST CONTACT DEVICE.
12174 APTIC NO. 29792

COMPLEX ALKALI IRON SULFATES A CONTRIBUTION TO THE THERMODYNAMICS OF FIRESDIDE HIGH-TEMPERATURE CORROSION.
12616 APTIC NO. 29783

WHEAT

EFFECT OF AIR AND WATER POLLUTION ON AGRICULTURAL PRODUCTS BY CD, PB, ZN ATTRIBUTED TO MINE REFINERY IN ANNAKA CITY, GUNMA PREFECTURE.
12601 APTIC NO. 27489

WIND ROSE

DISTRIBUTION OF POLLUTION AT SOME COUNTRY SITES.
12425 APTIC NO. 29582

WINDS

PROBLEMS OF PUBLIC NUISANCE CAUSED BY BAD ODORS IN HYOGO PREFECTURE.
12029 APTIC NO. 29599

INVESTIGATION OF HEAVY METAL POLLUTION IN IWAKI CITY.
12007 APTIC NO. 29787

ON CONDITIONS FOR PROPER USE OF ACTIVATED CARBON AS AN AIR PURIFICATION AGENT (2) - ITS EFFICIENCY FOR REMOVAL OF SO2 GAS.
12113 APTIC NO. 29496

DEVELOPMENT OF A METEOROLOGICALLY CONTROLLED AGRICULTURAL BURNING PROGRAM.
12058 APTIC NO. 29724

REPORT ON THE INVESTIGATION INTO THE MAINTENANCE AND THE SUPERVISION OF AIR-CLEANING APPARATUS AS AN INDICATION OF AIR POLLUTION.
12122 APTIC NO. 29840

REPORT FOR THE INVESTIGATION ON THE METHOD OF SO2 TEST.
12301 APTIC NO. 29381

A MEASUREMENT GRID FOR AIR POLLUTION IN THE MOUTH OF THE RIVER RHINE IN ROTTERDAM.
12333 APTIC NO. 29460

SIMPLIFIED TECHNIQUES IN AIR POLLUTION MEASUREMENT.
12289 APTIC NO. 29771

A COMPREHENSIVE SAMPLING SYSTEM FOR STUDYING THE RELATION BETWEEN VISIBILITY, METEOROLOGICAL PARAMETERS AND ATMOSPHERIC POLLUTION.
12276 APTIC NO. 30082

ANALYSIS OF HC OF LOW GRADE IN ATMOSPHERE.
12391 APTIC NO. 29482

THE 3,4-BENZPYRENE CONTENT OF THE AIR IN TWO INDUSTRIAL AREAS.
12400 APTIC NO. 29586

STATISTICAL ANALYSES OF AIR POLLUTION SAMPLING FREQUENCY IN AN EPIDEMIOLOGIC STUDY.
12378 APTIC NO. 29655

REPORT FROM THE NETHERLANDS: MEASUREMENT GRID FOR AIR POLLUTION.
12364 APTIC NO. 29798

LEAD CONCENTRATION IN YOKOHAMA AIR.
12399 APTIC NO. 29814

REGISTRATION OF THE SULPHUR DIOXIDE CONTENT OF THE AIR IN BUDAPEST.
12394 APTIC NO. 29868

A STUDY OF AIR POLLUTION AROUND A SULPHURIC ACID PLANT.
12374 APTIC NO. 29883

ON AIR POLLUTION IN MIZUSHIMA AREA.
12390 APTIC NO. 29895

STUDIES ON AIR POLLUTION DUE TO AUTOMOBILE EXHAUST. REPORT 15: AIR POLLUTION AT THE VICINITY OF BOOTHS IN MEISHIN HIGHWAY.
12389 APTIC NO. 30075

DISTRIBUTION OF POLLUTION AT SOME COUNTRY SITES.
12425 APTIC NO. 29582

GASEOUS PLUME DIFFUSION ABOUT ISOLATED STRUCTURES OF SIMPLE GEOMETRY. (ANNUAL PROGRESS REPORT).
12638 APTIC NO. 29584

EPISODE 104.
12410 APTIC NO. 29695

ATMOSPHERIC DISPERSION OF STACK EFFLUENTS.
12458 APTIC NO. 29773

AIR POLLUTION CONTROL SYSTEM (3).
12401 APTIC NO. 29795

ESTIMATION OF GROUND LEVEL CONCENTRATION BY SMOKE-DIFFUSION WIND TUNNELS.
12462 APTIC NO. 29820

TURBULENT DIFFUSION THEORY TAKING TURBULENT BOUNDARY LAYER INTO CONSIDERATION.
12463 APTIC NO. 29822

PLUME RISE: A RECENT CRITICAL REVIEW.
12408 APTIC NO. 30068

ON PLUMBIC POLLUTION OF MUNICIPAL ATMOSPHERE--BEHAVIORS OF PLUMBIC COMPOUND AS AEROSOL.
12431 APTIC NO. 30073

ON THE RELATIONSHIP BETWEEN AIR POLLUTION AND MORBIDITY AND MORTALITY OF THE POPULATION IN POLISH TOWNS.
12563 APTIC NO. 29575

PATIENT ADVICE DURING ACUTE AIR POLLUTION EPISODE.
12531 APTIC NO. 29878

STANDARD FADING CLOTHES FOR OXIDANTS.
12619 APTIC NO. 29866

STANDARDS OF AIR POLLUTION.
12643 APTIC NO. 29776

POLLUTIONS PREVENTION PLAN FOR CHIBA AND ICHIHARA CITIES IN CHIBA PREFECTURE.
12650 APTIC NO. 29813

WOOD

ACTIVATED CARBON INDUSTRY AND PROBLEMS IN FUTURE - SPHERICAL ACTIVATED CARBON FROM COAL.
12235 APTIC NO. 29942

WOOLS

BAGHOUSE OPERATION AT THE WHITING, INDIANA PLANT OF THE FEDERATED METALS DIVISION AMERICAN SMELTING AND REFINING COMPANY.
12107 APTIC NO. 29772

THE INFLUENCE OF AIR POLLUTION UPON THE DISCOLORATION OF THE DYED STUFF AND THE DECREASE OF TENSILE STRENGTH OF SOME FIBERS.
12612 APTIC NO. 29717

X

X-RAYS

METHOD TO ARREST AND REMOVE WHITE SMOKE PRODUCED FROM MOLTEN ZINC PLATING PROCESS.
12135 APTIC NO. 29940

COMPARISON OF VARIOUS METHODS OF DETERMINING QUARTZ CONTENT IN NOXIOUS DUST.
12263 APTIC NO. 29546

RESULTS OF COMPARATIVE TESTS ON QUARTZ CONTENT OBTAINED FROM LABORATORIES USING VARIOUS TECHNIQUES OF DETERMINATION.
12327 APTIC NO. 29552

STUDIES ON LEAD CHROMATE OBTAINED FROM TETRAALKYL LEAD IN LEADED GASOLINE. I. X-RAY DIFFRACTION TESTS OF THE LEAD CHROMATE CRYSTALS.
12296 APTIC NO. 29810

Y

YOKOHAMA

MEASUREMENT OF ATMOSPHERIC DUST BY LIGHT SCATTERING METHOD AND HIGH VOLUME SAMPLER METHOD.
12357 APTIC NO. 29864

A STUDY ON THE ESTIMATION OF THE REGIONAL CENTRAL VALUE OF AIR POLLUTION FROM OBSERVED VALUES.
12383 APTIC NO. 29518

LEAD CONCENTRATION IN YOKOHAMA AIR.
12399 APTIC NO. 29814

DISTRIBUTION OF LEAD IN THE AIR NEAR CITY ROADS.
12388 APTIC NO. 29918

CHANGE IN POLLUTANTS AND FUTURE PROBLEMS.
12680 APTIC NO. 29743

Z

ZINC

INVESTIGATION OF HEAVY METAL POLLUTION IN IWAKI CITY.
12007 APTIC NO. 29787

BASIC RESEARCH ON SMOKE DESULFURIZATION BY LIME-METALS, 1ST REPORT - DESULFURIZATION EFFECT BY ADDITION OF METAL.
12154 APTIC NO. 29478

BAGHOUSE OPERATION AT THE WHITING, INDIANA PLANT OF THE FEDERATED METALS DIVISION AMERICAN SMELTING AND REFINING COMPANY.
12107 APTIC NO. 29772

AIR POLLUTION.
12363 APTIC NO. 29510

ZINC COMPOUNDS

HEAVY METAL POLLUTION IN THE ONAHAMA INDUSTRIAL AREA. 1ST REPORT. DISTRIBUTION OF HEAVY METALS IN SOIL.
12006 APTIC NO. 29539

AIR POLLUTION BY LEAD AND ZINC IN THE AREA OF COMBINED METALLURGICA WORKS AND ITS INFLUENCE ON VEGETATION AND SOIL.
12031 APTIC NO. 29572

INVESTIGATION OF HEAVY METAL POLLUTION IN IWAKI CITY.
12007 APTIC NO. 29787

BASIC RESEARCH ON SMOKE DESULFURIZATION BY LIME-METALS, 2ND REPORT - EFFECT OF METAL ADDITION ON CALCINATION OF LIME.
12153 APTIC NO. 29080

METHOD TO ARREST AND REMOVE WHITE SMOKE PRODUCED FROM MOLTEN ZINC PLATING PROCESS.
12135 APTIC NO. 29940

COMBUSTION OF WASTES CENTERING AROUND REMOVAL OF NOXIOUS GAS.
12077 APTIC NO. 29985

THE SCRUBBING OF TAIL GAS FROM SULFURIC ACID PLANTS.
12067 APTIC NO. 30096

ON THE EFFECT OF ACCOMPANYING GASES IN QUANTITATIVE ANALYSIS OF HYDROGEN SULFIDE USING METHYLENE BLUE.
12343 APTIC NO. 29505

PLANTS AND SOILS AS INDICATORS OF METALS IN THE AIR.
12281 APTIC NO. 30113

CONCENTRATION VARIATION OF SOME TRACE METALS IN PRECIPITATION FROM GREAT PLAINS THUNDERSTORMS.
12457 APTIC NO. 29706

SPECTROSCOPIC STUDIES OF PORPHYRINS, PHTHALOCYANINES, AND CS2 IN INERT MATRICES.
12471 APTIC NO. 30050

ADHESION TO PIPE S WALL WITH AEROSOL PARTICLES FLOWING IN A PIPE AS TURBULENT FLOW.
12523 APTIC NO. 30071

EFFECT OF AIR AND WATER POLLUTION ON AGRICULTURAL PRODUCTS BY CD, PB, ZN ATTRIBUTED TO MINE REFINERY IN ANNAKA CITY, GUNMA PREFECTURE.
12601 APTIC NO. 27489

AUTHOR INDEX

A

MERCURY IN THE ENVIRONMENT.
*11992 APTIC NO. 29489

ABE S
TEN YEARS OF AIR POLLUTION IN HOKKAIDO.
*12367 APTIC NO. 29727

ABE Y
EXPERIMENTAL STUDY ON PLASTICS INCINERATION.
12017 APTIC NO. 29841

ABELES F B
ABSCISSION: THE PHYTOGERONTOLOGICAL EFFECTS OF ETHYLENE.
*12592 APTIC NO. 30060

ABEYTA O R
PROBLEMS OF AIR POLLUTION AND MEASURES TO COMBAT IT IN EL PASO, TEXAS.
*12368 APTIC NO. 30094

ABRIL P
A NEW METHOD OF MEASURING THE OPACITY OF COMBUSTION FUMES.
*12249 APTIC NO. 29068

ADACHI M
EFFECTS OF SOOT AND SMOKE ON THE HEALTH OF SCHOOL CHILDREN.
12556 APTIC NO. 29791

ADAM J R
COLLECTION EFFICIENCIES OF RAINDROPS FOR SUBMICRON PARTICULATES.
*12404 APTIC NO. 29709

ADZE R R
A CONVENIENT METHOD FOR APPLYING A SUPPORTING FILM TO GRIDS USED ON WALKENHORST THERMAL PRECIPITATOR PLUGS.
*12250 APTIC NO. 30116

AIZAWA S
ON THE EFFECT OF ACCOMPANYING GASES IN QUANTITATIVE ANALYSIS OF HYDROGEN SULFIDE USING METHYLENE BLUE.
12343 APTIC NO. 29505

AIKEN C V
POLLUTION TESTS ON IDLING GASOLINE MOTORS.
*12251 APTIC NO. 29765

ALARY J
THE EFFECTS OF LOW LEVEL FLUORINE POLLUTION IN A MOUNTAIN VALLEY.
12595 APTIC NO. 29991

ALDERSON H N
CORROSION RATES OF MILD STEEL IN COASTAL, INDUSTRIAL, AND INLAND AREAS OF NORTHERN CALIFORNIA.
12620 APTIC NO. 29810

ALENGRIN F
THE EFFECTS OF LOW LEVEL FLUORINE POLLUTION IN A MOUNTAIN VALLEY.
12595 APTIC NO. 29991

ALEXANDER S
POSSIBLE CORRELATION BETWEEN ATMOSPHERIC OZONE CONTENT AND COSMIC RAY INTENSITY VARIATIONS.
*12369 APTIC NO. 30031

ALFEROVA L A
OXIDATION OF SODIUM SULFIDE AND MERCAPTIDE IN BLACK LIQUOR.
*12071 APTIC NO. 29278

ALIBAEV T S
ON THE STUDY OF ALLERGIC REACTIONS IN CONNECTION WITH AIR POLLUTION IN SETTLEMENTS WITH INDUSTRIAL DISCHARGES.
*12528 APTIC NO. 29981

ALPERIN V Z
AN AUTOMATIC COULOMETRIC ANALYZER OF OZONE IN THE ATMOSPHERE.
12274 APTIC NO. 29757

ALPERS J H
CHANGES IN AIRWAYS CONDUCTANCE ON SMOKING A CIGARETTE.
12540 APTIC NO. 30135

ALPERT S B
H-OIL AS A TOOL FOR LOW SULFUR FUEL PRODUCTION.
12126 APTIC NO. 29808

AMMON H P T
CATECHOLAMINE-INDEPENDENT GLYCOGENOLYSIS IN BRAIN DURING CARBON MONOXIDE POISONING.
12545 APTIC NO. 29835

ANDO E
CONTROL OF EXHAUST GAS EMISSION OF MITSUBISHI COLT GALANT.
12228 APTIC NO. 29901

ANDO W
STUDIES ON PHOTOCHEMICAL REACTION BETWEEN SULFURIC ACID GAS AND ORGANIC COMPOUNDS (2).
12512 APTIC NO. 29463

PHOTOCHEMICAL REACTION BETWEEN SO2 AND ORGANIC COMPOUNDS (II).
12514 APTIC NO. 29967

ANDRE M
TESTS OF REPRESENTATIVE SPECIMENS OF CRYSTALLINE SILICA CONTAINED IN THE ATMOSPHERE OF INDUSTRIAL PLANTS.
*12370 APTIC NO. 29553

THE PROBLEM OF REPRESENTATIVE SAMPLING. CONDITIONS FOR CORRECT USE OF AN APPARATUS FOR SAMPLING.
*12252 APTIC NO. 29557

ANDRONACHE E
STUDIES OF THE SIGNIFICANCE OF DUSTS AND GASES FOR THE PATHOLOGY OF INFECTIONS OF THE RESPIRATORY TRACT.
12529 APTIC NO. 29571

ANECHINA P
EVOLUTION OF THE ATMOSPHERIC CONTAMINATION IN MADRID IN 1969.
*12371 APTIC NO. 30089

ANSON D
CARBON MONOXIDE AS A COMBUSTION CONTROL PARAMETER.
*12072 APTIC NO. 29471

AOKI M
STUDY ON THE EFFECTS OF AIR POLLUTION ON HUMAN BODY--WITH SPECIAL REFERENCE TO OBJECTIVE, COMPARATIVE STUDY OF ALL THE INHABITANTS BY CHEST X-RAY RINDINGS.
12554 APTIC NO. 29904

AONO T
ENVIRONMENTAL POLLUTION CONTROL MEASURES IN WEST EUROPE AND PROBLEMS OF CARBIDE ELECTRIC FURNACE DUST IN JAPAN.
*12073 APTIC NO. 29675

ARAI H
ON THE CONTINUOUS MEASUREMENT AND RECORDING OF OXIDANTS BY ELECTRIC CONDUCTIVITY METHOD.
12293 APTIC NO. 29758

ARAMAKI M
STUDIES ON AIR POLLUTION CONTROL BY ADDITIVE INJECTION. PART II - PREVENTION OF CLOGGING AT HIGH TEMPERATURE HEATING SURFACE OF BOILER BY ADDING MG(OH)2 POWDER.
*12075 APTIC NO. 29941

ARDELAN I
STUDIES OF THE SIGNIFICANCE OF DUSTS AND GASES FOR THE PATHOLOGY OF INFECTIONS OF THE RESPIRATORY TRACT.
*12529 APTIC NO. 29571

ARDELEAN I
THE 3,4-BENZPYRENE CONTENT OF THE AIR IN TWO INDUSTRIAL AREAS.
12400 APTIC NO. 29586

ARGENBRIGHT L P
SMELTER POLLUTION CONTROL--FACTS AND PROBLEMS.
*12076 APTIC NO. 29622

ARGIROWA M
STUDIES ON THE INFLUENCE OF AIR POLLUTION ON THE HEALTH OF THE PEOPLE AT BELOSLAV, DISTRICT OF VARNA, PEOPLE S REPUBLIC OF BULGARIA.
12557 APTIC NO. 29573

ARIMA Y
COMBUSTION OF WASTES CENTERING AROUND REMOVAL OF NOXIOUS GAS.
*12077 APTIC NO. 29985

ARORA J L
SULFUR RECOVERY IN THE MANUFACTURE OF PIPELINE GAS FROM COAL.
12635 APTIC NO. 29143

ASHWELL G E
SOME RESULTS OF LIDAR PROBING OF THE TROPOSHERE.
12434 APTIC NO. 30105

ASTRUP P
INTRODUCTION AND GENERAL DESCRIPTION OF THE STUDY AND OF THE PROCEDURES FOR PROLONGED EXPOSURE TO CARBON MONOXIDE AND HYPOXIA.
*12530 APTIC NO. 29503
OXYGEN AFFINITY AND ACID-BASE STATUS OF HUMAN BLOOD DURING EXPOSURE TO HYPOXIA AND CARBON MONOXIDE.
12567 APTIC NO. 29528

ATROSHCHENKO V I
METHOD OF CALCULATING EQUILIBRIUM COMPOSITIONS IN INTERACTION OF NITROGEN OXIDES WITH NITRIC ACID SOLUTIONS.
*12470 APTIC NO. 29800

ATSUGAWA M
DESULFURIZATION OF EXHAUST GAS.
*12078 APTIC NO. 29927

ATTIWILL P M
ATMOSPHERIC CARBON DIOXIDE AND THE BIOSPHERE.
*12593 APTIC NO. 30078

AUCLAIR M
LOW POWER HOUSEHOLD OIL BURNING INSTALLATIONS. HOW THEY FUNCTION, PROPOSAL FOR A METHOD OF REGULATING THEM.
*12079 APTIC NO. 30108

AVY A P
APPARATUS FOR TEST PREPARATION IN VERY HUMID ATMOSPHERES AND IN PARTICULAR AT DRILLING OPERATIONS.
*12253 APTIC NO. 29541
A PHOTOGRAPHIC METHOD OF DETERMINING THE EMISSION OF DUST GENERATED BY INDUSTRIAL MACHINERY.
*12254 APTIC NO. 29544

AXELROD H D
FLUOROMETRIC DETERMINATION OF BROMINE: APPLICATION TO MEASUREMENT OF BROMINE AEROSOLS.
*12255 APTIC NO. 29811
FILTER METHOD FOR THE MEASUREMENT OF ATMOSPHERIC HYDROGEN SULFIDE.
12330 APTIC NO. 30004

AYRES S M
PATIENT ADVICE DURING ACUTE AIR POLLUTION EPISODE.
*12531 APTIC NO. 29878

AZPITARTE J L
NOMOGRAPH GIVES NO OXIDATION.
*11993 APTIC NO. 27535

B

BABA
MITSUBISHI-RESEARCH DISC SCRUBBER.
*12080 APTIC NO. 29536
MITSUBISHI-RESEARCH WEDGE SCRUBBER.
*12081 APTIC NO. 29537

BABA Y
ON MEASUREMENT OF ODOR.
*12256 APTIC NO. 29726

BACH D R
RAYLEIGH SCATTERING OF RUBY-LASER LIGHT BY NEUTRAL GASES.
12450 APTIC NO. 28884

BACHMAN C H
OZONE AND AIR IONS ACCOMPANYING BIOLOGICAL APPLICATIONS OF ELECTRIC FIELDS.
*12594 APTIC NO. 29897

BACKUS E S
INCINERATOR DESIGNED TO ANTICIPATE PROBLEMS.
*11994 APTIC NO. 29669

BAGDASARYAN V S
METHOD OF CALCULATING EQUILIBRIUM COMPOSITIONS IN INTERACTION OF NITROGEN OXIDES WITH NITRIC ACID SOLUTIONS.
12470 APTIC NO. 29800

BAHLO K
DETERMINATION OF THE SOOT INDEX IN WASTE GASES OF OIL BURNERS.
*12257 APTIC NO. 29749

BAJEMA L L
SPECTROSCOPIC STUDIES OF PORPHYRINS, PHTHALOCYANINES, AND CS2 IN INERT MATRICES.
*12471 APTIC NO. 30050

BAKER P J
PULSED EMISSION CHIMNEY.
*12082 APTIC NO. 29626

BALABAJEWA L
STUDIES ON THE INFLUENCE OF AIR POLLUTION ON THE HEALTH OF THE PEOPLE AT BELOSLAV, DISTRICT OF VARNA, PEOPLE S REPUBLIC OF BULGARIA.
12557 APTIC NO. 29573

BALLUFF R N
EXHAUST SYSTEM.
12165 APTIC NO. 29723

BANDYOPADHYAY M
A MATHEMATICAL MODEL FOR MEASURING MASS/NUMBER INDEX OF RESPIRABLE AIRBORNE COAL DUST.
*12258 APTIC NO. 30081

BARNEA M
EXPERIMENTAL STUDIES ON THE EFFECT OF SMALL DOSES OF LEAD AND SULFUR DIOXIDE.
*12532 APTIC NO. 29588

BARNEY J E II
MEASUREMENT OF ATMOSPHERIC LEVELS OF PESTICIDES.
12392 APTIC NO. 29812

BARTOK W
NO-X CONTROL FROM STATIONARY SOURCES.
12427 APTIC NO. 29764

BASCO N
THE ADIABATIC FLASH PHOTOLYSIS OF NO2 AND SO2.
*12259 APTIC NO. 29630

BATES R D JR
LASER-INDUCED VIBRATIONAL FLUORESCENCE IN NITROUS OXIDE.
*12472 APTIC NO. 28910

BAUM H E
BALL BLANKETS FOR EFFLUENT TREATMENT.
*12083 APTIC NO. 30034

BAUMGARDNER R
AUTOMATED ANALYSIS SYSTEMS MAKES KRAFT EMISSION MEASUREMENTS EASY.
12325 APTIC NO. 29913

BAZLEY E S
PULMONARY COMPLICATIONS OF ASBESTOS EXPOSURE.
12552 APTIC NO. 29221

BEAUMONT M
EXPERIENCE WITH INDUSTRIAL MULTI-FLUE CHIMNEYS OF 100-200 IN HEIGHT.
*12473 APTIC NO. 29890

BECKER K
WHY LEAD IN GASOLINE? THE EFFECT OF LEAD CONTAINING ANTI-KNOCK AGENTS FOR OTTO ENGINE FUELS.
*11995 APTIC NO. 29782
GASOLINE WITHOUT LEAD. TECHNICAL POSSIBILITIES FOR A NON-LEADED FUEL.
*12084 APTIC NO. 30010

BECKER K H
PHYSICAL-CHEMICAL PROBLEMS OF AIR POLLUTION.
*11996 APTIC NO. 29786

BELSKY T

AIR POLLUTION.
12324 APTIC NO. 29858

BENDER R J

AIR POLLUTION CONTROL: WHERE DO WE STAND? WHERE MUST WE GO? ... AND HOW DO WE GET THERE? Power, 115(6):S.4-S.11, June 1971.
*12085 APTIC NO. 29680

EFFECTS OF LOW CARBON MONOXIDE CONCENTRATIONS IN MAN.
*12533 APTIC NO. 29609

BENSON H E

SEPARATION OF CO2 AND H2S FROM GAS MIXTURES.
*12086 APTIC NO. 29752

BENZKO W

ON HYGIENIC AND TOXICOLOGICAL PROBLEMS OF POLLUTION BY ARSENIC.
*12534 APTIC NO. 29587

BEREZHNOY V M

ON THE DEPOSITION OF MATTER ON SPHERICAL AEROSOL PARTICLES IN THE RANGE OF INTERMEDIATE KNUDSEN NUMBERS.
*12405 APTIC NO. 29667

BEREZIN V A

USE OF VANADIUM CATALYSTS IN PURIFYING INDUSTRIAL WASTE GASES FROM SULFUR DIOXIDE.
*12087 APTIC NO. 29980

BERG T G O

COLLECTION EFFICIENCY IN WASHOUT BY RAIN.
*12406 APTIC NO. 29710

BERNERT J

EMISSION MONITORING WITH ACKNOWLEDGED MEASURING UNITS AND ANALYZERS.
*12260 APTIC NO. 29955

BEYNON J H

INSTRUMENTS AND THEIR APPLICATIONS IN MASS SPECTROMETRY.
*12261 APTIC NO. 29579

BHATTACHARYYA K K

LAB TESTS SHOW ELECTRIC FIELD MIGHT HELP REDUCE ENGINE KNOCK.
*12088 APTIC NO. 30036

BIBBO D N

PLAIN TALK FOR EQUIPMENT SELLERS--AND BUYERS.
*12089 APTIC NO. 29618

BIENSTOCK D

KINETICS OF RECOVERING SULFUR FROM THE SPENT SEED IN AN MHD POWER PLANT.
12118 APTIC NO. 30048

BIERING L

THE REACTION KINETICS OF MERCAPTAN WITH OZONE IN THE PPM RANGE.
12497 APTIC NO. 30016

BIHELLER J

TESTS WITH A SAMPLING AND MEASUREMENT METHOD FOR ROUTINE DETERMINATION OF FLUORINE IN THE LOWER ATMOSPHERE.
*12262 APTIC NO. 29887

BILLINGSLEY J

KINETICS AND MECHANISMS OF THE VIBRATIONAL RELAXATION OF NOX2PI(V EQUALS 1) IN THE TEMPERATURE RANGE 100-433 K.
*12474 APTIC NO. 29881

BIRO Z

THE TASKS OF THE PUBLIC HEALTH SYSTEM IN THE FIELD OF THE HYGIENE OF THE AIR IN THE PEOPLE S REPUBLIC OF HUNGARY.
12667 APTIC NO. 29592

BLACKMORE W

HISTOPATHOLOGIC FINDINGS IN RATS EXPOSED TO AMBIENT AND FILTERED AIR.
12550 APTIC NO. 29715

PULMONARY CHANGES IN 7000 MICE FOLLOWING PROLONGED EXPOSURE TO AMBIENT AND FILTERED LOS ANGELES AIR.
12551 APTIC NO. 29763

BLANCHARD L E JR

TAKING ANOTHER LOOK BEFORE WE TAKE THE LEAD OUT.
*11997 APTIC NO. 30067

BODLE W W

SULFUR RECOVERY IN THE MANUFACTURE OF PIPELINE GAS FROM COAL.
12635 APTIC NO. 29143

BOER W

ON SOME BASIC PROBLEMS OF THE PURIFICATION OF THE AIR.
*12676 APTIC NO. 29591

BOGOMOLOV YU P

MICROSTRUCTURE OF ATMOSPHERIC SURFACE LAYER AEROSOLS.
12433 APTIC NO. 29668

BOLTZ C L

NOBODY BREATHES FRESH AIR. FACTS AND ARGUMENTS ABOUT AIR POLLUTION.
*12677 APTIC NO. 29459

BONELLI J E

FLUOROMETRIC DETERMINATION OF BROMINE: APPLICATION TO MEASUREMENT OF BROMINE AEROSOLS.
12255 APTIC NO. 29811

BONNEMAISON M

TWO OBSERVATIONS IN A FLUORSPAR QUARRY.
*12535 APTIC NO. 29565

BONNER F T

FRACTIONATION OF OXYGEN ISOTOPES BETWEEN NO AND H20.
12297 APTIC NO. 30114

BOUFFANT L L

COMPARISON OF VARIOUS METHODS OF DETERMINING QUARTZ CONTENT IN NOXIOUS DUST.
*12263 APTIC NO. 29546

OBSERVATIONS ON THE FIGHT AGAINST DUST BY MEANS OF SALINE AEROSOLS.
*12475 APTIC NO. 29551

BOUHUYS A

CIGARETTE SMOKING: OBJECTIVE EVIDENCE FOR LUNG DAMAGE IN TEEN-AGERS.
12342 APTIC NO. 30097

BOULEY G

INSTRUMENT FOR STUDYING THE ACTION OF EXHAUST GASES DILUTED IN THE AIR, ON BACTERIAL, CELLULAR, AND TISSULAR CULTURES.
*12476 APTIC NO. 29849

BOUQUIAUX J

AIR POLLUTION BY SMOKE AND SO2.
*12373 APTIC NO. 29566

AIR POLLUTION BY SMOKE AND SO2.
*12372 APTIC NO. 29289

BOURBON P

THE EFFECTS OF LOW LEVEL FLUORINE POLLUTION IN A MOUNTAIN VALLEY.
*12595 APTIC NO. 29991

BOWEN H D

ELECTROSTATIC FIELD BREAKDOWN PHENOMENA IN APPLYING CHARGED PARTICLES.
12236 APTIC NO. 30006

BOWMAN C R

INVESTIGATION OF NITRIC OXIDE FORMATION KINETICS IN COMBUSTION PROCESSES: THE HYDROGEN-OXYGEN-NITROGEN REACTION.
*12477 APTIC NO. 29610

BOWMAN W B

PRODUCTION OF GASES OF KNOWN SPECIFIC ACTIVITY IN A REACTOR FOR CALIBRATING GASEOUS EFFLUENT MONITORS.
*12264 APTIC NO. 29848

BRANDEL A

EXPERIMENTS CONCERNING STOICHIOMETRIC COMBUSTION IN OIL-FIRED FURNACES OF FRENCH POWER PLANTS.
*12090 APTIC NO. 29513

BRASLAVSKY S

PHOTOLYSIS OF THIOLANE VAPOR.
*12478 APTIC NO. 30115

BRAUN D

THE ABSORPTION COEFFICIENT OF A GASEOUS SUBSTANCE ON A SWARMING FILM.
*12479 APTIC NO. 29994

BRAVERMAN M M

TENTATIVE METHOD OF ANALYSIS FOR BERYLLIUM CONTENT OF ATMOSPHERIC PARTICULATE MATTER.
12307 APTIC NO. 29487

BREISACHER P
RAPID ASSESSMENT OF TESTS OF POLLUTANT EFFECTS IN MAN.
*12536 APTIC NO. 29431

BRESSAN D J
CHEMICAL PROCESSES AT THE AIR-SEA INTERFACE: THE BEHAVIOR OF FLUORINE.
12468 APTIC NO. 30126

BRICARD J
FORMATION OF PARTICLES BY PHOTOLYSIS AND RADIOLYSIS.
*12407 APTIC NO. 29809

BRIGGS G A
PLUME RISE: A RECENT CRITICAL REVIEW.
*12408 APTIC NO. 30068

BRINK B
SPECIAL COLUMN CONFIGURATION FOR THE ANALYSIS OF SOME INORGANIC GASES AND LIGHT HYDROCARBONS.
12315 APTIC NO. 30029

BRINKE R
VENTILATION AND EXPLOSION EXPERIMENTS IN A WATER-TUBE BOILER OF A POWER PLANT.
*12091 APTIC NO. 29514
SELF-IGNITION OF GASEOUS FUELS THROUGH THE HEATING EFFECT OF A WAST GAS STREAM.
*11998 APTIC NO. 29739

BROCK J R
ATTACHMENT OF TRACE SUBSTANCES ON ATMOSPHERIC AEROSOLS.
*12409 APTIC NO. 30046

BRODINE V
EPISODE 104.
*12410 APTIC NO. 29695

BROGAN J J
ALMOST POLLUTION-FREE POWERPLANTS ARE SCHEDULED FOR EARLY 1975.
*12092 APTIC NO. 29856

BROKESHOULDER S F
MICROEMISSION SPECTROCHEMICAL ANALYSIS OF HUMAN LUNGS FOR BERYLLIUM.
12580 APTIC NO. 29475

BROWDER T J
MODERN SULFURIC ACID TECHNOLOGY.
*12093 APTIC NO. 29607

BRYANT J M
TENTATIVE METHOD OF ANALYSIS FOR BERYLLIUM CONTENT OF ATMOSPHERIC PARTICULATE MATTER.
12307 APTIC NO. 29487

BRYCE SMITH D
LEAD POLLUTION--A GROWING HAZARD TO PUBLIC HEALTH.
*11999 APTIC NO. 29872

BUCKINGHAM W B
PULMONARY COMPLICATIONS OF ASBESTOS EXPOSURE.
12552 APTIC NO. 29221

BUENZ P
CAUSES, MEASUREMENT AND LIMITATION OF PARTICULATE EMISSION FROM OIL-FIRED STEAM BOILERS.
*12000 APTIC NO. 30021

BULANI W
LAB TESTS SHOW ELECTRIC FIELD MIGHT HELP REDUCE ENGINE KNOCK.
12088 APTIC NO. 30036

BULGER J S
ELECTRON ENERGY LOSS SPECTRA OF NO2 AND SO2.
*12480 APTIC NO. 30079

BURDA P
ATMOSPHERIC CORROSION OF THE ELECTROLYTIC NI-CR COATINGS.
*12609 APTIC NO. 30039

BURKE E
CEMENT DUST AT GREAT BRITAIN.
*12001 APTIC NO. 29832

BURTON G
THE IRRITANT POTENTIAL OF POLLUTANTS IN THE ATMOSPHERE.
12271 APTIC NO. 29751

BUSCH H P
THE NEW DUPLEX IRON MELTING PLANT AT THE M. BUSCH KG IN WEHRSTAPEL.
*12094 APTIC NO. 29861

BUSHTUEVA K A
ATMOSPHERIC POLLUTIONS AND HEALTH.
*12537 APTIC NO. 29971

BUSLIN E
CARBON MONOXIDE AS TOXIC GAS.
*12538 APTIC NO. 29640

BUTYUGINA E M
DEVELOPMENT OF A METHOD FOR DETERMINING SULPHUR OXIDES IN FLUE GASES.
*12265 APTIC NO. 30084

BYERS R L
A COMPUTERIZED METHOD FOR SIZE CHARACTERIZATION OF ATMOSPHERIC AEROSOLS BY THE SCANNING ELECTRON MICROSCOPE.
*12266 APTIC NO. 30019
GRAVITATIONAL AND DRY CENTRIFUGAL COLLECTORS AND AIR POLLUTION CONTROL.
*12095 APTIC NO. 30123

BYFORD C S
A METER FOR THE SITE DETERMINATION OF HYDROLYSABLE FLUORIDES IN SULPHUR HEXAFLUORIDE.
12336 APTIC NO. 30007

C

CABROL C
ATMOSPHERIC POLLUTION. APPARATUS FOR MEASURING THE CONCENTRATION OF CONDENSATION NUCLEI IN THE ATMOSPHERE.
*12267 APTIC NO. 30041

CALLAWAY J J
PULMONARY COMPLICATIONS OF ASBESTOS EXPOSURE.
12552 APTIC NO. 29221

CALLEAR A B
RATES OF ENERGY TRANSFER FROM N2 A CUBED SIGMA(+) U TO VARIOUS MOLECULES. INITIAL AND FINAL QUANTUM STATES IN THE TRANSFER TO NOX SQUARED PI AND HG(6 1S SUB O), AND VIBRATIONAL RELAXATION OF N2 A CUBED SIGMA(+) U (V EQUALS 1) IN HELIUM.
*12481 APTIC NO. 29750
KINETICS AND MECHANISMS OF THE VIBRATIONAL RELAXATION OF NOX2PI(V EQUALS 1) IN THE TEMPERATURE RANGE 100-433 K.
12474 APTIC NO. 29881

CAMACHO F
NOMOGRAPH GIVES NO OXIDATION.
11993 APTIC NO. 27535

CARABINE M D
PARTICLE SIZE DISTRIBUTION IN AEROSOLS FORMED FROM GASEOUS REACTANTS.
*12268 APTIC NO. 29854

CARNOW B W
THE ROLE OF AIR POLLUTION ON CHRONIC OBSTRUCTIVE PULMONARY DISEASE.
*12539 APTIC NO. 30136

CAROTTI A
TENTATIVE METHOD OF ANALYSIS FOR BERYLLIUM CONTENT OF ATMOSPHERIC PARTICULATE MATTER.
12307 APTIC NO. 29487

CARUTHERS L T
PRODUCTION OF GASES OF KNOWN SPECIFIC ACTIVITY IN A REACTOR FOR CALIBRATING GASEOUS EFFLUENT MONITORS.
12264 APTIC NO. 29848

CECIL R R
ESSO/UNION FUEL OIL HYDRODESULFURIZATION PROCESSES. PART II: COMMERCIAL EXPERIENCE WITH GO-FINING.
*12096 APTIC NO. 29926

CHABERT B
EFFECT OF LOW SILICIUM CONTENT AND SOME SURFACE TREATMENT ON THE OXIDATION OF CARBON STEELS IN CARBON DIOXIDE ATMOSPHERES AT MEDIUM TEMPERATURES.
12611 APTIC NO. 29995

CHAKRABORTY M K
A MATHEMATICAL MODEL FOR MEASURING MASS/NUMBER INDEX OF RESPIRABLE AIRBORNE COAL DUST.
12258 APTIC NO. 30081

CHAN S H
INFRARED RADIATION PROPERTIES OF SULFUR DIOXIDE.
*12269 APTIC NO. 29521

CHANG Y C
CHEMISTRY OF SINGLET OXYGEN. X. CAROTENOID QUENCHING PARALLELS BIOLOGICAL PROTECTION.
12546 APTIC NO. 29716

CHANGNON S A JR
REPLY.
*12411 APTIC NO. 29470

CHAPUIS A
ATMOSPHERIC POLLUTION. APPARATUS FOR MEASURING THE CONCENTRATION OF CONDENSATION NUCLEI IN THE ATMOSPHERE.
12267 APTIC NO. 30041

CHASE H
HEAT EXTRACTION AIDS DEPOLLUTION OF GASES AND WATER IN CHEVROLET FOUNDRY.
*12097 APTIC NO. 29523

CHATTERJEE S D
POSSIBLE CORRELATION BETWEEN ATMOSPHERIC OZONE CONTENT AND COSMIC RAY INTENSITY VARIATIONS.
12369 APTIC NO. 30031

CHILTON T H
REDUCING SO2 EMISSION FROM STATIONARY SOURCES.
*12098 APTIC NO. 30102

CHISAKA F
EXPERIMENT ON PHOTOCHEMICAL REACTION OF MOTOR EXHAUST GAS.
12469 APTIC NO. 29500

CHOLAK J
MICROEMISSION SPECTROCHEMICAL ANALYSIS OF HUMAN LUNGS FOR BERYLLIUM.
12580 APTIC NO. 29475

CHORY J P
THE SE-DUCT--AN IDEAL SOLUTION FOR GAS HEATERS.
*12002 APTIC NO. 30132

CHOW H Y
CHARGES ON DROPLETS PRODUCED BY ATOMIZATION OF SOLUTIONS.
*12482 APTIC NO. 29919

CHRISTENSON D L
PIEZOELECTRIC-ELECTROSTATIC AEROSOL MASS CONCENTRATION MONITOR.
12331 APTIC NO. 30061

CHURCH H W
ESTIMATION OF VARIANCE OF AIR SAMPLER DATA BASED ON REPLICATE SAMPLES.
12314 APTIC NO. 29642

CLARKE G
CHANGES IN AIRWAYS CONDUCTANCE ON SMOKING A CIGARETTE.
*12540 APTIC NO. 30135

CLARKE R H
DISCUSSIONS DEPTH OF THE BOUNDARY LAYER.
ERROR

CLARKE W H N
CARBON MONOXIDE AS A COMBUSTION CONTROL PARAMETER.
12072 APTIC NO. 29471

CLARKSON R B
METHANESULFENYL CHLORIDE. V. THE SPONTANEOUS DECOMPOSITION OF METHANESULFENYL CHLORIDE AND METHYLSULFUR TRICHLORIDE.
12485 APTIC NO. 29674

CLAY A J
MARKET TENDENCIES FOR LEAD AND ZINC.
*12003 APTIC NO. 30001

CLERC N
FORMATION OF PARTICLES BY PHOTOLYSIS AND RADIOLYSIS.
12407 APTIC NO. 29809

CLINK W L
INDOOR/OUTDOOR AIR QUALITY RELATIONSHIPS.
12398 APTIC NO. 30090

CLOSSON A
STUDY OF POLYCYCLIC HYDROCARBONS FIXED ON ATMOSPHERIC DUSTS.
*12270 APTIC NO. 29851

COBLE A
NEW EYE ON THE AIR.
*12412 APTIC NO. 29644

COHEN A S
LONG RANGE PLANNING IN AIR RESOURCE MANAGEMENT.
*12657 APTIC NO. 30056

COHEN E R
APPROXIMATE SOLUTION OF THE EQUATIONS FOR AEROSOL AGGLOMERATION.
*12483 APTIC NO. 30111

COHEN S I
CARBON MONOXIDE AND SURVIVAL FROM MYOCARDIAL INFARCTION.
*12541 APTIC NO. 30127

COIN L
AIR POLLUTION IN AN URBAN ENVIRONMENT.
*12413 APTIC NO. 30045

COMMANAY L
ATMOSPHERIC POLLUTION. APPARATUS FOR MEASURING THE CONCENTRATION OF CONDENSATION NUCLEI IN THE ATMOSPHERE.
12267 APTIC NO. 30041

COOKE D
COLLECTION EFFICIENCY OF WATER DROPLETS IN AGCL AEROSOL.
12430 APTIC NO. 29687

CORN M
THE IRRITANT POTENTIAL OF POLLUTANTS IN THE ATMOSPHERE.
*12271 APTIC NO. 29751

CORNU A
STUDY OF POLYCYCLIC HYDROCARBONS FIXED ON ATMOSPHERIC DUSTS.
12270 APTIC NO. 29851

COSTA D
THE PROBLEM OF INDUSTRIAL DUST: WAYS TO REGULATE ITS COLLECTION.
*12099 APTIC NO. 29990

COTE W A
INDOOR/OUTDOOR AIR QUALITY RELATIONSHIPS.
12398 APTIC NO. 30090

COTTON J B
USING TITANIUM IN THE CHEMICAL PLANT.
*12610 APTIC NO. 29857

COUTURAUD J C
THE STUDY OF THE EVOLUTION OF ATOMIC SIZED PARTICLES IN THE AIR.
12436 APTIC NO. 29946

CRAKER L E
ETHYLENE PRODUCTION FROM OZONE INJURED PLANTS.
*12596 APTIC NO. 30059
ABSCISSION: THE PHYTOGERONTOLOGICAL EFFECTS OF ETHYLENE.
12592 APTIC NO. 30060

CRALLEY L J
THE ROLE OF TRACE METALS IN CHEMICAL CARCINOGENESIS: ASBESTOS CANCERS.
12543 APTIC NO. 29993

CRAWFORD O H
THE SCATTERING OF THERMAL ELECTRONS BY CARBON MONOXIDE.
*12484 APTIC NO. 29654

CREUTZ LECHLEITNER C M A
RECORDING DEVICE COMBINED WITH THERMAL PRECIPITATOR FOR MEASURING DUST CONTENT IN AIR.
12285 APTIC NO. 29540

CRISTEA I
RESEARCH ON THE LEAD INTOXICATION OF THE GALLINACEANS.
*12597 APTIC NO. 30033

CROKE E J
LONG RANGE PLANNING IN AIR RESOURCE MANAGEMENT.
12657 APTIC NO. 30056

CROUSE L F
FUME INCINERATION: EFFECTIVE, EFFICIENT.
*12100 APTIC NO. 30077

CSANADY G T
THE EFFECT OF ATMOSPHERIC CONDITIONS ON PLUME RISE.
12455 APTIC NO. 29865

CUCU M
STUDIES OF THE SIGNIFICANCE OF DUSTS AND GASES FOR THE PATHOLOGY OF INFECTIONS OF THE RESPIRATORY TRACT.
12529 APTIC NO. 29571
EXPERIMENTAL STUDIES ON THE EFFECT OF SMALL DOSES OF LEAD AND SULFUR DIOXIDE.
12532 APTIC NO. 29588

CUGELL D W
PULMONARY COMPLICATIONS OF ASBESTOS EXPOSURE.
12552 APTIC NO. 29221

CULP D A
THE ANALYSIS OF MERCURY IN URINE, BLOOD, WATER, AND AIR.
12306 APTIC NO. 29652

CUNNINGHAM A T S
CARBON MONOXIDE AS A COMBUSTION CONTROL PARAMETER.
12072 APTIC NO. 29471

D

DAGNALL A
SOME RESULTS OF LIDAR PROBING OF THE TROPOSHERE.
12434 APTIC NO. 30105

DAHLMANN A
ANNUAL SURVEY ON CUPOLA FURNACES, SEQUENCE EIGHT.
*12101 APTIC NO. 30101

DAILEY W V
ANALYZERS FOR MONITORING AIR QUALITY IN POLLUTION.
*12272 APTIC NO. 29634

DAITO S
PRACTICAL ANALYTICAL METHOD OF EXHAUST REFLUX EFFECT ON NOX EMISSION CONTROL.
*12102 APTIC NO. 29499

DALGARNO A
THE SCATTERING OF THERMAL ELECTRONS BY CARBON MONOXIDE.
12484 APTIC NO. 29654

DAMGAARD F
INFLUENCE OF PROLONGED CARBON MONOXIDE EXPOSURE AND ALTITUDE HYPOXIA ON SERUM LIPIDS IN MAN.
12558 APTIC NO. 29529
INFLUENCE OF PROLONGED CARBON MONOXIDE EXPOSURE AND HIGH ALTITUDE ON THE COMPOSITION OF BLOOD AND URINE IN MAN.
12559 APTIC NO. 29613

DANA M T
SCAVENGING OF SOLUBLE DYE PARTICLES BY RAIN.
*12414 APTIC NO. 29708

DANIELS B
TODAY'S BASE OF EUROPEAN MINERAL OIL SUPPLY.
*12004 APTIC NO. 28337

DANNE F J
CLOSE SCRUTINY OF AUTOMOBILE EXHAUST GASES. TECHNICAL INSPECTION SERVICE FOR AUTOMOBILES IN NEW PREMISES.
*12005 APTIC NO. 30002

DARRAS R
EFFECT OF LOW SILICIUM CONTENT AND SOME SURFACE TREATMENT ON THE OXIDATION OF CARBON STEELS IN CARBON DIOXIDE ATMOSPHERES AT MEDIUM TEMPERATURES.
*12611 APTIC NO. 29995

DAVIS E R
FUEL VAPOR ADSORBING APPARATUS.
*12103 APTIC NO. 27562

DAVIS J C
PULPERS APPLY ODOR CONTROL.
*12104 APTIC NO. 30062

DAVIS J W
A COMPUTERIZED METHOD FOR SIZE CHARACTERIZATION OF ATMOSPHERIC AEROSOLS BY THE SCANNING ELECTRON MICROSCOPE.
12266 APTIC NO. 30019

DAVYDOV A A
INFRARED SPECTROSCOPIC STUDY OF THE CATALYTIC OXIDATION OF CARBON MONOXIDE TO CARBON DIOXIDE ON MANGANESE DIOXIDE.
*12105 APTIC NO. 30091

DE LA SERNA J
EVOLUTION OF THE ATMOSPHERIC CONTAMINATION IN MADRID IN 1969.
12371 APTIC NO. 30089

DE SLOOVER J
RELATION BETWEEN INDUSTRIALIZATION AND THE DISTRIBUTION AND GROWTH OF EPIPHYTIC LICHENS AND MOSSES IN MONTREAL.
12602 APTIC NO. 29998

DEANE M
CARBON MONOXIDE AND SURVIVAL FROM MYOCARDIAL INFARCTION.
12541 APTIC NO. 30127

DECLERCQ D
EFFECT OF LOW SILICIUM CONTENT AND SOME SURFACE TREATMENT ON THE OXIDATION OF CARBON STEELS IN CARBON DIOXIDE ATMOSPHERES AT MEDIUM TEMPERATURES.
12611 APTIC NO. 29995

DECUSARA M
AIR POLLUTION BY NITRIC OXIDE FROM FERTILIZER FACTORIES.
12051 APTIC NO. 29568

DELBENE J E
MOLECULAR ORBITAL STUDY OF NH2, NO2, AND NF2.
ERROR

DELEPLANQUE M
CHART FOR EVALUATION OF THE RISK OF SILICOSIS.
*12542 APTIC NO. 29559

DELPLANQUE H
DETERMINATION OF A DOCTRINE FOR VALID SAMPLING.
*12273 APTIC NO. 29560

DELUISI J J
EFFECT OF THE TEMPERATURE DEPENDENCE OF OZONE ABSORPTION ON VERTICAL OZONE DISTRIBUTIONS DEDUCED FROM UMKEHR OBSERVATIONS.
*12415 APTIC NO. 29875

DENISOV V V
USE OF VANADIUM CATALYSTS IN PURIFYING INDUSTRIAL WASTE GASES FROM SULFUR DIOXIDE.
12087 APTIC NO. 29980

DENNY R W
CHEMISTRY OF SINGLET OXYGEN. X. CAROTENOID QUENCHING PARALLELS BIOLOGICAL PROTECTION.
12546 APTIC NO. 29716

DESCOLAS J
DUST COLLECTING SYSTEMS IN CEMENT WORKS.
*12106 APTIC NO. 29831

DEWITT I L
A PROGRAM TO SAMPLE AND ANALYZE AIR POLLUTION IN THE VICINITY OF A CHEMICAL RECLAMATION PLANT.
12039 APTIC NO. 29698

DIAMANT R M E
THE PREVENTION OF POLLUTION. PART II-POLLUTION AND THE LAW.
*12658 APTIC NO. 29474
THE PREVENTION OF POLLUTION.
*12416 APTIC NO. 29623

DINGLE A N
SCAVENGING OF TRACER IN SEVERE STORMS.
*12417 APTIC NO. 29691

DIXON J R
THE ROLE OF TRACE METALS IN CHEMICAL CARCINOGENESIS: ASBESTOS CANCERS.
*12543 APTIC NO. 29993

DMITRIEV M T
PHOTOCHEMICAL SMOG.
*12418 APTIC NO. 29672
AN AUTOMATIC COULOMETRIC ANALYZER OF OZONE IN THE ATMOSPHERE.
*12274 APTIC NO. 29757

DOLGNER R
THE STUDY OF THE POLLUTED AIR INFLUENCE ON CHILDREN S HEALTH IN RUHRDISTRICT.
*12544 APTIC NO. 29899

DONALDSON H M
TENTATIVE METHOD OF ANALYSIS FOR BERYLLIUM CONTENT OF ATMOSPHERIC PARTICULATE MATTER.
12307 APTIC NO. 29487

DONOSO J J
BAGHOUSE OPERATION AT THE WHITING, INDIANA PLANT OF THE FEDERATED METALS DIVISION AMERICAN SMELTING AND REFINING COMPANY.
*12107 APTIC NO. 29772

DOUGLASS I B
METHANESULFENYL CHLORIDE. V. THE SPONTANEOUS DECOMPOSITION OF METHANESULFENYL CHLORIDE AND METHYLSULFUR TRICHLORIDE.
*12485 APTIC NO. 29674

DOYLE C D
OPERATING EXPERIENCE OF EVAPORATIVE COOLERS SERVING CUPOLAS AIR POLLUTION CONTROL SYSTEMS.
12034 APTIC NO. 30032

DRATWA H
MEASUREMENT DATA OBTAINED FROM EXPERIMENTS WITH THE DYNAVANE HIGH CAPACITY DRY TYPE DUST SEPARATOR.
*12108 APTIC NO. 28791

DREW R T
A NEW DUST-GENERATING SYSTEM FOR INHALATION STUDIES.
*12486 APTIC NO. 29653

DUBOIS L
TENTATIVE METHOD OF ANALYSIS FOR BERYLLIUM CONTENT OF ATMOSPHERIC PARTICULATE MATTER.
12307 APTIC NO. 29487

DUBOVITSKY B A
HIGH-CONCENTRATION SULFUR DIOXIDE FROM CALCINING PYRITES IN THE DKSM FURNACE.
12157 APTIC NO. 29982

DUCKWORTH S
A SIMPLE TECHNIQUE FOR MEASURING MEAN H2S CONCENTRATION.
*12275 APTIC NO. 29844

DUGGER W M
AIR POLLUTION OXIDANTS - THEIR EFFECTS ON METABOLIC PROCESSES IN PLANTS.
*12598 APTIC NO. 29524

DUKLER A E
DEPOSITION OF LIQUID OR SOLID DISPERSIONS FROM TURBULENT GAS STREAMS: A STOCHASTIC MODEL.
12494 APTIC NO. 29873

DULFU R
RESEARCH ON THE LEAD INTOXICATION OF THE GALLINACEANS.
12597 APTIC NO. 30033

DULFU V
RESEARCH ON THE LEAD INTOXICATION OF THE GALLINACEANS.
12597 APTIC NO. 30033

DUNN R L
TFE-FLUOROCARBON FIBER FILTER BAGS--IT COSTS MORE TO GO FIRST CLASS.
*12109 APTIC NO. 30121

DYLA J F
IMPROVEMENTS IN OR RELATING TO ELECTRO-PRECIPITATORS.
*12110 APTIC NO. 30044

E

ECHIGOYA E
METHOD TO MANUFACTURE CATALYST FOR DESULFURIZATION BY HYDROGEN ADDITION OF LIQUID HYDROCARBON.
12234 APTIC NO. 29974

EDA S
HEAVY METAL POLLUTION IN THE ONAHAMA INDUSTRIAL AREA. 1ST REPORT. DISTRIBUTION OF HEAVY METALS IN SOIL.
*12006 APTIC NO. 29539

INVESTIGATION OF HEAVY METAL POLLUTION IN IWAKI CITY.
*12007 APTIC NO. 29787

EGGLETON A E J
A COMPREHENSIVE SAMPLING SYSTEM FOR STUDYING THE RELATION BETWEEN VISIBILITY, METEOROLOGICAL PARAMETERS AND ATMOSPHERIC POLLUTION.
*12276 APTIC NO. 30082

EGI K
DIRECT DESULFURIZATION OF HEAVY OIL.
*12111 APTIC NO. 29908

EHRLICH A
POLLUTION REGULATIONS AND THEIR EFFECT ON VEHICLE PREPARATION.
*12112 APTIC NO. 29659

EIDUS YA T
HETEROGENEOUS CATALYSIS INVOLVING ASTOICHIOMETRIC COMPONENTS. IV. INITIATION EFFECTS OF CARBON MONOXIDE AND OXYGEN OXIDE IN THE HYDROPOLYMERIZATION OF PROPENE AND ISOBUTENE.
12488 APTIC NO. 29871

EIICHI I
THE TENDENCY OF AIR POLLUTION AT NAGOYA CITY OBSERVED FROM THE WEIGHT OF FALLING DUST.
12396 APTIC NO. 30076

EJIRI S
INVESTIGATION OF HEAVY METAL POLLUTION IN IWAKI CITY.
12007 APTIC NO. 29787

EKO N
ON CONDITIONS FOR PROPER USE OF ACTIVATED CARBON AS AN AIR PURIFICATION AGENT (2) - ITS EFFICIENCY FOR REMOVAL OF SO2 GAS.
*12113 APTIC NO. 29496

ELLIOT T C
ODOR CONTROL: ITS TIME IS COMING.
*12114 APTIC NO. 29877

EMI J
FILTRATION OF MULTI-DISPERSING AEROSOL UNDER THE FORCE OF GRAVITY.
*12115 APTIC NO. 29730

ENDO Y
LEAD CONCENTRATION IN YOKOHAMA AIR.
12399 APTIC NO. 29814

ENGELHARDT H
A GAS ANALYSER FOR THE MEASUREMENT OF IMPURITIES IN AIR.
*12277 APTIC NO. 29581

ENGELMANN R J
PRIORITIES IN SCAVENGING RESEARCH.
*12419 APTIC NO. 29689

EPPERLEIN H
STUDIES OF VENTILATORY MEASURES INDOORS AGAINST POLLEN ALLERGY.
*12116 APTIC NO. 30011

ERDOS E
KINETICS OF THE REACTION BETWEEN THE SOLID SODIUM CARBONATE AND THE GASEOUS SULPHUR DIOXIDE. VI. STATISTICAL MOLECULAR MODEL OF THE EXCESS KINETIC FUNCTION.
*12487 APTIC NO. 29702

EREMENKO N K
CATALYTIC OXIDATION OF CARBON MONOXIDE IN THE PRESENCE OF RECENTLY SYNTHESIZED PLATINUM COMPLEXES.
*12117 APTIC NO. 29896

ERSHOV N I
HETEROGENEOUS CATALYSIS INVOLVING ASTOICHIOMETRIC COMPONENTS. IV. INITIATION EFFECTS OF CARBON MONOXIDE AND OXYGEN OXIDE IN THE HYDROPOLYMERIZATION OF PROPENE AND ISOBUTENE.
*12488 APTIC NO. 29871

ESTLER C J
CATECHOLAMINE-INDEPENDENT GLYCOGENOLYSIS IN BRAIN DURING CARBON MONOXIDE POISONING.
*12545 APTIC NO. 29835

ESUMI Y
A SHORT TERM DETERMINATION OF BENZO(A)PYRENE AND BENZO(K) FLUORANTHENE IN AIR POLLUTANTS.
12319 APTIC NO. 29965

EWELL T W
DESIGN OF NEW SILVER-RECOVERY INCINERATOR.
*12008 APTIC NO. 29635

F

FABLING F T
A METER FOR THE SITE DETERMINATION OF HYDROLYSABLE FLUORIDES IN SULPHUR HEXAFLUORIDE.
12336 APTIC NO. 30007

FALQUE J
ATMOSPHERIC POLLUTANTS FRENCH LEGISLATION. STANDARD MEASURING METHODS. RECENT COMMERCIAL APPARATUS.
12638 APTIC NO. 29003

FAUGERE J G
BORDEAUX. STUDY OF ATMOSPHERIC POLLUTION IN THE BUILT-UP AREA.
*12420 APTIC NO. 30109

FAY J A
JET AIRCRAFT AIR POLLUTANT PRODUCTION AND DISPERSION.
12016 APTIC NO. 30130

FAYED M E S
A STUDY OF AIR POLLUTION AROUND A SULPHURIC ACID PLANT.
*12374 APTIC NO. 29083

FEHSENFELD F C
SOME ASPECTS OF THE METAL ION CHEMISTRY OF THE EARTH'S ATMOSPHERE.
12421 APTIC NO. 28891

FELDMANN H F
KINETICS OF RECOVERING SULFUR FROM THE SPENT SEED IN AN MHD POWER PLANT.
*12118 APTIC NO. 30048

FERGUSON E E
SOME ASPECTS OF THE METAL ION CHEMISTRY OF THE EARTH'S ATMOSPHERE.
*12421 APTIC NO. 28891

FERRARI G
PROBLEMS OF AERATION OF THE CRANKCASE OF RECIPROCATING ENGINES WITH AN OTTO WORK CYCLE.
*12009 APTIC NO. 29721

FIALA E
EXHAUST GAS EVALUATION BY AIR RATIO COEFFICIENTS.
*12278 APTIC NO. 29638

FIFE J A
AIR POLLUTION TEST METHODS COMPARED IN INCINERATOR EVALUATION PROGRAM.
*12119 APTIC NO. 29837

FINK W H
CALCULATIONS OF THE GROUND AND EXCITED STATE ENERGIES OF NO2.
*12489 APTIC NO. 29530

FLETCHER C M
CHANGES IN AIRWAYS CONDUCTANCE ON SMOKING A CIGARETTE.
12540 APTIC NO. 30135

FLETCHER J F
A NATIONAL ESTIMATE OF PUBLIC AND INDUSTRIAL HEAT REJECTION REQUIREMENTS BY DECADES THROUGH THE YEAR 2000 AD.
12018 APTIC NO. 29272

FLEWELLING F J
LOSS OF MERCURY FROM CHLORALKALI PLANTS.
*12120 APTIC NO. 30117

FLYNN G W
LASER-INDUCED VIBRATIONAL FLUORESCENCE IN NITROUS OXIDE.
12472 APTIC NO. 28910

FOERSTER E F
CATALYTIC REDUCTION OF SULFUR DIOXIDE ON IRON-ALUMINA BIFUNCTIONAL CATALYSTS.
12152 APTIC NO. 30064

FONTAINE A E
INSTRUMENTS AND THEIR APPLICATIONS IN MASS SPECTROMETRY.
12261 APTIC NO. 29579

FONTAINE P
EXPERIMENTS CONCERNING STOICHIOMETRIC COMBUSTION IN OIL-FIRED FURNACES OF FRENCH POWER PLANTS.
12090 APTIC NO. 29513

FONTAN J
THE STUDY OF THE EVOLUTION OF ATOMIC SIZED PARTICLES IN THE AIR.
12436 APTIC NO. 29946

FOOTE C S
CHEMISTRY OF SINGLET OXYGEN. X. CAROTENOID QUENCHING PARALLELS BIOLOGICAL PROTECTION.
*12546 APTIC NO. 29716

FRASER M D
ASPHALTENE HYDRODESULFURIZATION WITH SMALL CATALYST PARTICLES DISPOSED IN A GUARD CHAMBER-MAIN REACTOR SYSTEM.
*12121 APTIC NO. 29719

FREEMAN S F
INFRARED FOURIER TRANSFORM SPECTROSCOPY IN FLAVOR ANALYSIS III.
12312 APTIC NO. 29056

FRIEDRICH F D
CONTROL OF POLLUTANT EMISSION AND SULPHURIC ACID CORROSION FROM COMBUSTION OF RESIDUAL FUEL OIL. PART I: LOW-PRESSURE HEATING BOILERS WITH MECHANICAL ATOMIZING BURNERS.
12164 APTIC NO. 30055

FRIEDRICH H
GENERATION AND MEASUREMNT OF AIR IONS FOR MEDICAL APPLICATIONS AND THEIR INFLUENCE ON REACTION TIME AND MONOSYNAPTIC REFLEX OF MAN.
*12547 APTIC NO. 29267

FUGAS M
APPLICATION OF FLUORIMETRY IN SMOKE MEASUREMENT.
12280 APTIC NO. 29704

FUJIE K
SUSPENDED PARTICULATES IN OSAKA CITY.
*12375 APTIC NO. 29853

FUJII J
DETERMINATION OF LEAD CONTENTS IN AUTOMOBILE EXHAUST GAS.
12013 APTIC NO. 29661

MEASUREMENTS OF AIRBORNE DUST.
12288 APTIC NO. 29885

FUJII M
THE INFLUENCE OF AIR POLLUTION UPON THE DISCOLORATION OF THE DYED STUFF AND THE DECREASE OF TENSILE STRENGTH OF SOME FIBERS.
12612 APTIC NO. 29717

FUJII S
REPORT ON THE INVESTIGATION INTO THE MAINTENANCE AND THE SUPERVISION OF AIR-CLEANING APPARATUS AS AN INDICATION OF AIR POLLUTION.
*12122 APTIC NO. 29840

FUJIKAWA F
THE INFLUENCE OF AIR POLLUTION UPON THE DISCOLORATION OF THE DYED STUFF AND THE DECREASE OF TENSILE STRENGTH OF SOME FIBERS.
*12612 APTIC NO. 29717

FUJINE K
DUST COLLECTOR FOR ELECTRIC FURNACE MANUFACTURING FERROALLOY.
*12123 APTIC NO. 29481

FUJINO T
OUTLOOK OF ENVIRONMENTAL POLLUTION AND ITS PREVENTION TECHNOLOGY.
*12124 APTIC NO. 29600

FUJITA E
LUMINESCT SPECTROMETER ANALYSIS METHOD OF QUANTITATIVE ANALYSIS OF METALS IN DUST FLOATING IN ATMOSPHERE.
*12279 APTIC NO. 29466

FUKUDA S
PERFORMANCE OF CHARCOAL-IMPREGNATED FILTER PAPER TYPE CP-20 FOR COLLECTING AIRBORNE RADIOIODINE.
12185 APTIC NO. 29870

FUKUOKA S
LEAD POLLUTION AND PHOTOCHEMICAL SMOG IN TOKYO.
*12376 APTIC NO. 29647

FUKUSHIMA T
LEAD CONCENTRATION IN YOKOHAMA AIR.
12399 APTIC NO. 29814

FUKUZAWA H
STUDY ON MECHANISM OF REACTION WITH SULFUR DIOXIDE OF LIMESTONE POWDER BLOWN INTO COMBUSTION GAS.
12146 APTIC NO. 29479

INVESTIGATION ON THE MEASURING ERRORS OF CONDUCTOMETRIC SULFUR DIOXIDE ANALYZER USED FOR AIR POLLUTION MONITOR.
12356 APTIC NO. 29398

FULLER H I
CLEANER AIR IN LONDON.
*12377 APTIC NO. 29912

FUNABASHI S
EFFECTS OF SOOT AND SMOKE ON THE HEALTH OF SCHOOL CHILDREN.
12556 APTIC NO. 29791

STUDIES ON AIR POLLUTION AND BRONCHIAL ASTHMA. REPORT 1.
*12548 APTIC NO. 29925

FUNAYAMA Y
HEAVY METAL POLLUTION IN THE ONAHAMA INDUSTRIAL AREA. 1ST REPORT. DISTRIBUTION OF HEAVY METALS IN SOIL.
12006 APTIC NO. 29539

FUNKE G
PROGRESS IN DEDUSTING TECHNIQUE IN CEMENT WORKS.
*12125 APTIC NO. 29830

FUQUAY J J
SCAVENGING IN PERSPECTIVE.
*12422 APTIC NO. 29688

FURUYA Y
STUDIES ON AIR POLLUTION AND BRONCHIAL ASTHMA. REPORT 1.
12548 APTIC NO. 29925

G

GAISNE M A
A CONTRIBUTION TO THE EVALUATION OF THE RISK OF SILICOSIS.
*12549 APTIC NO. 29558

GALBREATH R B
H-OIL AS A TOOL FOR LOW SULFUR FUEL PRODUCTION.
*12126 APTIC NO. 29808

GALEANO S F
AIR POLLUTION: CONTROLLED OPERATION OF A NSSC RECOVERY FURNACE.
*12127 APTIC NO. 29621

GALLAGHER J J
KINETICS OF RECOVERING SULFUR FROM THE SPENT SEED IN AN MHD POWER PLANT.
12118 APTIC NO. 30048

GALLET M
STUDY OF DUSTINESS AND PURIFICATION OF AIR IN A QUARRY.
*12128 APTIC NO. 29562

GARDINER W C JR
INITIATION RATE FOR SHOCK-HEATED HYDROGEN-OXYGEN CARBON MONOXIDE- ARGON MIXTURES AS DETERMINED BY OH INDUCTION TIME MEASUREMENTS.
*12490 APTIC NO. 29700

GARDNER M B
HISTOPATHOLOGIC FINDINGS IN RATS EXPOSED TO AMBIENT AND FILTERED AIR.
*12550 APTIC NO. 29715
PULMONARY CHANGES IN 7000 MICE FOLLOWING PROLONGED EXPOSURE TO AMBIENT AND FILTERED LOS ANGELES AIR.
*12551 APTIC NO. 29763

GARLET R
ELIMINATION OF OXIDES CONTAINED IN CERTAIN RESIDUAL INDUSTRIAL GASES.
*12129 APTIC NO. 30043

GATZ D F
AUTOMATIC SEQUENTIAL RAIN SAMPLER FOR SCAVENGING STUDIES.
*12423 APTIC NO. 29741

GAUB M L
TERATOGENIC EFFECTS OF ANESTHETIC AGENTS: NITROUS OXIDE.
12584 APTIC NO. 28919

GAUTHIER M
MECHANISM OF SINGLET MOLECULAR OXYGEN FORMATION FROM PHOTOLYSIS OF OZONE AT 2537 A.
*12424 APTIC NO. 30110

GENTILIZZA M
APPLICATION OF FLUORIMETRY IN SMOKE MEASUREMENT.
*12280 APTIC NO. 29704

GIEVER P M
STATISTICAL ANALYSES OF AIR POLLUTION SAMPLING FREQUENCY IN AN EPIDEMIOLOGIC STUDY.
*12378 APTIC NO. 296[illegible]

GILBERT O L
A BIOLOGICAL SCALE FOR THE ESTIMATION OF SULPHUR DIOXIDE POLLUTION.
*12379 APTIC NO. 29522
FURTHER STUDIES ON THE EFFECT OF SULPHUR DIOXIDE ON LICHENS AND BRYOPHYTES.
*12399 APTIC NO. 29643

GILLER A
COMPUTER APPLICATION IN THE ENVIRONMENTAL SCIENCE ANALYSIS AND CONTROL OF ENVIROMENTAL AIR.
12335 APTIC NO. 29657

GILS W
MARKET DEVELOPMENT IN GAS ECONOMY.
*12010 APTIC NO. 29781

GINZBURG S SH
USE OF VANADIUM CATALYSTS IN PURIFYING INDUSTRIAL WASTE GASES FROM SULFUR DIOXIDE.
12087 APTIC NO. 29980

GJELLEROD H
CIRCULATION, METABOLISM, AND VENTILATION DURING PROLONGED EXPOSURE TO CARBON MONOXIDE AND TO HIGH ALTITUDE.
12560 APTIC NO. 29869

GOCKLEY G H
INDUSTRIAL REACTION TO SULPHUR DIOXIDE CONTROL EQUIPMENT AND STANDARDS.
*12637 APTIC NO. 29604

GODIN J
INSTRUMENT FOR STUDYING THE ACTION OF EXHAUST GASES DILUTED IN THE AIR, ON BACTERIAL, CELLULAR, AND TISSULAR CULTURES.
12476 APTIC NO. 29849

GOETHERT M
EFFECTS OF LOW CARBON MONOXIDE CONCENTRATIONS IN MAN.
12533 APTIC NO. 29609

GOLDBERG M S
CRITERIA OF INJURIOUSNESS AS THE BASIS OF STANDARDS OF THE HYGIENE OF THE AIR.
12642 APTIC NO. 29574

GOLDEN D M
STANDARD STATES FOR THERMOCHEMICAL AND ACTIVATION PARAMETERS.
*12491 APTIC NO. 30024

GOLDSMITH J R
CARBON MONOXIDE AND SURVIVAL FROM MYOCARDIAL INFARCTION.
12541 APTIC NO. 30127
AIR POLLUTION EPIDEMIOLOGY: A WICKED PROBLEM, AN INFORMATIONAL MAZE, AND A PROFESSIONAL RESPONSIBILITY.
*12673 APTIC NO. 30138

GOLDINGS [illegible] M
DISSOCIATIVE ELECTRON ATTACHMENT PROCESSES IN SO2 AND NO2.
12444 APTIC NO. 30008
ELECTRON ENERGY LOSS SPECTRA OF NO2 AND SO2.
12480 APTIC NO. 30079

GOODMAN G T
PLANTS AND SOILS AS INDICATORS OF METALS IN THE AIR.
*12281 APTIC NO. 30113

GOORIAH B
DISTRIBUTION OF POLLUTION AT SOME COUNTRY SITES.
*12425 APTIC NO. 29582

GORYACHEV I K
FILTER FOR COLLECTING CARBON BLACK.
*12130 APTIC NO. 30104

GRACEY D R
PULMONARY COMPLICATIONS OF ASBESTOS EXPOSURE.
*12552 APTIC NO. 29221

GRANDJEAN J
AIR POLLUTION BY SMOKE AND SO2.
12373 APTIC NO. 29566
AIR POLLUTION BY SMOKE AND SO2.
12372 APTIC NO. 29289

GRANT N
MERCURY IN MAN.
*12011 APTIC NO. 29643

GREENBURG L
AIR POLLUTION–THE STATUS TODAY.
12681 APTIC NO. 28923

GRILLOT R
ATMOSPHERIC POLLUTANTS FRENCH LEGISLATION. STANDARD MEASURING METHODS. RECENT COMMERCIAL APPARATUS.
*12638 APTIC NO. 29003

GROB K
GC-MS ANALYSIS OF THE SEMIVOLATILES OF CIGARETTE SMOKE.
*12282 APTIC NO. 29660

GROENEN P J
FLAME PHOTOMETRIC DETECTION OF VOLATILE SULPHUR COMPOUNDS IN SMOKE FROM VARIOUS TYPES OF CIGARETTES.
*12283 APTIC NO. 29874

GROSICK H A
AMMONIA DISPOSAL–COKE PLANTS.
*12012 APTIC NO. 29627

GUCKER F T
A METHOD OF VERIFYING THE COEFFICIENTS A-SUB-N AND B-SUB-N OF THE MIE THEORY OF LIGHT SCATTERING BY NONABSORBING ISOTROPIC SPHERES.
*12492 APTIC NO. 29488

GUTOW B
HOW EMISSION CONTROL AFFECTS MELTING COSTS.
*12628 APTIC NO. 29879

GUYATT A R
CHANGES IN AIRWAYS CONDUCTANCE ON SMOKING A CIGARETTE.
12540 APTIC NO. 30135

H

HAAGEN SMIT A J
ATMOSPHERIC REACTIONS AND SCAVENGING PROCESSES.
*12426 APTIC NO. 29774

HAAS L A
CATALYTIC REDUCTION OF SULFUR DIOXIDE ON IRON-ALUMINA BIFUNCTIONAL CATALYSTS.
12152 APTIC NO. 30064

HACKNEY J D
RAPID ASSESSMENT OF TESTS OF POLLUTANT EFFECTS IN MAN.
12536 APTIC NO. 29431

HADEMENOS D G
OZONE AND AIR IONS ACCOMPANYING BIOLOGICAL APPLICATIONS OF ELECTRIC FIELDS.
12594 APTIC NO. 29897

HAGEN H
FIRST RESULTS WITH THE M.A.N.-EXPERIMENTAL GAS TURBINE FOR COMMERCIAL VEHICLES.
*12131 APTIC NO. 30088

HAGIHARA Y
STUDIES ON THE SMOKE DAMAGE OF TREES. (I) ON THE ACUTE DAMAGE SYMPTOMS BY THE SO2.
12607 APTIC NO. 29976

HALES J M
A METHOD FOR OBTAINING DILUTE MIXTURES OF GASES.
*12284 APTIC NO. 29651

HALL D A
ATMOSPHERIC POLLUTION AT MODERN COKE WORKS.
*12380 APTIC NO. 29257

HALL H J
NO-X CONTROL FROM STATIONARY SOURCES.
*12427 APTIC NO. 29764

HALPERN P
EXPERIMENTS WITH A REGIONAL FINE-MESH PREDICTION MODEL.
12465 APTIC NO. 30107

HALTER S
LEGAL ASPECTS OF AIR POLLUTION IN BELGIUM AND OTHER NEIGHBORING COUNTRIES.
*12659 APTIC NO. 30040

HAMBRIC J C
INTERNAL COMBUSTION ENGINE EXHAUST SYSTEM.
*12132 APTIC NO. 29836

HAMPL V
COLLECTION EFFICIENCY OF WATER DROPLETS IN AGCL AEROSOL.
12430 APTIC NO. 29687

HANDA T
A SHORT TERM DETERMINATION OF BENZO(A)PYRENE AND BENZO(K) FLUORANTHENE IN AIR POLLUTANTS.
12319 APTIC NO. 29965

HANEJIMA
A REPORT OF THE PERIODIC MEASUREMENT OF SOOT AND DUST, AND SULFUR OXIDES IN THE AIR AROUND THE HOSPITAL.
*12381 APTIC NO. 29794

HANES B
HISTOPATHOLOGIC FINDINGS IN RATS EXPOSED TO AMBIENT AND FILTERED AIR.
12550 APTIC NO. 29715
PULMONARY CHANGES IN 7000 MICE FOLLOWING PROLONGED EXPOSURE TO AMBIENT AND FILTERED LOS ANGELES AIR.
12551 APTIC NO. 29763

HANSEN T I
PLASMA VOLUME AND VASCULAR PERMEABILITY DURING HYPOXIA AND CARBON MONOXIDE EXPOSURE.
12582 APTIC NO. 29614

HARA H
NEW METHOD OF MANUFACTURING CATALYST FOR EXHAUST GAS.
*12133 APTIC NO. 29733

HARA M
ON DAMAGE TO PLANTS BY FLUORIDES IN EXHAUST GAS FROM TILE MANUFACTURING FACTORY.
12606 APTIC NO. 29597

HARROP J A
PARTICLE CAPTURE MECHANISMS IN FIBROUS FILTERS.
12214 APTIC NO. 29324

HARTOGENSIS F
RECORDING DEVICE COMBINED WITH THERMAL PRECIPITATOR FOR MEASURING DUST CONTENT IN AIR.
*12285 APTIC NO. 29540

HASEGAWA T
METAL COMPONENTS OF FLOATING DUST.
*12286 APTIC NO. 29464
DETERMINATION OF LEAD CONTENTS IN AUTOMOBILE EXHAUST GAS.
*12013 APTIC NO. 29661
MEASUREMENTS OF AIRBORNE DUST.
*12288 APTIC NO. 29885
DETERMINATION OF AROMATIC HYDROCARBONS EMITTED FROM THE DRY BATTERY PLANT.
*12287 APTIC NO. 29862

HASEGAWA Y
ITAI-ITAI (OUCH-OUCH) DISEASE AND CADMIUM POLLUTION IN JAPAN.
12581 APTIC NO. 29673

HASHIMOTO Y
ON THE EFFECT OF ACCOMPANYING GASES IN QUANTITATIVE ANALYSIS OF HYDROGEN SULFIDE USING METHYLENE BLUE.
12343 APTIC NO. 29505

HASHIZUME M
METHOD TO ARREST AND REMOVE WHITE SMOKE PRODUCED FROM MOLTEN ZINC PLATING PROCESS.
*12135 APTIC NO. 29940

HATSUKANO H
STUDY ON THE EFFECTS OF AIR POLLUTION ON HUMAN BODY--WITH SPECIAL REFERENCE TO OBJECTIVE, COMPARATIVE STUDY OF ALL THE INHABITANTS BY CHEST X-RAY RINDINGS.
12554 APTIC NO. 29904

HAWKES A S
GASOLINE, LEAD AND AIR POLLUTION.
*12014 APTIC NO. 30027

HAYASHI Y
PRACTICAL ANALYTICAL METHOD OF EXHAUST REFLUX EFFECT ON NOX EMISSION CONTROL.
12102 APTIC NO. 29499

HEDLEY A B
PROGRESS REVIEW NO. 62: COMBUSTION OF SINGLE DROPLETS AND SIMPLIFIED SPRAY SYSTEMS.
*12493 APTIC NO. 29803

HEICKLEN J
PHOTOLYSIS OF THIOLANE VAPOR.
12478 APTIC NO. 30115

HEIM F
CATECHOLAMINE-INDEPENDENT GLYCOGENOLYSIS IN BRAIN DURING CARBON MONOXIDE POISONING.
12545 APTIC NO. 29835

HEINIG P
LOW LEVEL CARBON MONOXIDE EXPOSURE AND HUMAN PSYCHOMOTOR PERFORMANCE.
12573 APTIC NO. 29473

HELLWIG A
STUDY OF THE SUSPENDED PARTICULATES AND LEAD CONCENTRATION IN THE AIR WITHIN THE CITY LIMITS OF MAGDEBURG.
*12382 APTIC NO. 29515

HELTON M R
MEASUREMENT OF ATMOSPHERIC LEVELS OF PESTICIDES.
12392 APTIC NO. 29812

HENDERSON R
THE ANALYSIS OF MERCURY IN URINE, BLOOD, WATER, AND AIR.
12306 APTIC NO. 29652

HENDRICKSON E R
SIMPLIFIED TECHNIQUES IN AIR POLLUTION MEASUREMENT.
*12289 APTIC NO. 29771

HENKE A M
GULF RESIDUAL OIL HDS PROCESS.
*12136 APTIC NO. 29501

HERMANN P
EXPERIENCES WITH FLUORINE EMISSION MEASUREMENTS.
*12290 APTIC NO. 29737

HERRICK R A
TENTATIVE METHOD OF ANALYSIS FOR DUSTFALL FROM THE ATMOSPHERE.
12344 APTIC NO. 30119

HERRMANN G
THE EMISSION AND IMMISSION CONDITIONS OF THE POWER PLANTS IN THE BOEHLENER AREA.
12045 APTIC NO. 30072

HERTWECK M S
AIRBORNE INFLUENZA PR8-A VIRUS INFECTIONS IN ACTIVELY IMMUNIZED MICE.
12167 APTIC NO. 29718

HERY M
OBSERVATIONS CONCERNING THE USE OF THE A.R.M. APPARATUS AND THE POSSIBILITIES OF UTILIZING THE RESULTS FOR PREVENTIVE MEASURES.
*12291 APTIC NO. 29556

HESS B
THERMODYNAMICS OF THE AEROSOLS IN THE ATMOSPHERE.
*12428 APTIC NO. 29785

HESS K
GASIFICATION OF HYDROCARBONS.
*12137 APTIC NO. 29779

HESS W
CONTROL OF OIL-FIRED HEATERS, A MODERN COMMUNAL TASK.
*12015 APTIC NO. 30100

HEWITT G F
DEPOSITION OF LIQUID OR SOLID DISPERSIONS FROM TURBULENT GAS STREAMS: A STOCHASTIC MODEL.
12494 APTIC NO. 29873

HEYWOOD J B
JET AIRCRAFT AIR POLLUTANT PRODUCTION AND DISPERSION.
*12016 APTIC NO. 30130

HIBY J W
THE ABSORPTION COEFFICIENT OF A GASEOUS SUBSTANCE ON A SWARMING FILM.
12479 APTIC NO. 29994

HIKICHI H
HEAVY METAL POLLUTION IN THE ONAHAMA INDUSTRIAL AREA. 1ST REPORT. DISTRIBUTION OF HEAVY METALS IN SOIL.
12006 APTIC NO. 29539
INVESTIGATION OF HEAVY METAL POLLUTION IN IWAKI CITY.
12007 APTIC NO. 29787

HILL I D
CHANGES IN AIRWAYS CONDUCTANCE ON SMOKING A CIGARETTE.
12540 APTIC NO. 30135

HILLIARD R K
SCAVENGING OF AEROSOL PARTICLES BY SPRAYS.
12437 APTIC NO. 29711

HIMI Y
A STUDY ON THE ESTIMATION OF THE REGIONAL CENTRAL VALUE OF AIR POLLUTION FROM OBSERVED VALUES.
*12383 APTIC NO. 29518

HIRAI K
THE INFLUENCE OF AIR POLLUTION UPON THE DISCOLORATION OF THE DYED STUFF AND THE DECREASE OF TENSILE STRENGTH OF SOME FIBERS.
12612 APTIC NO. 29717

HIRAKAWA H
DEVICE TO HOLD IN PLACE ATOMIZER NOZZLES OF A WASHER DEVICE FOR SULFUR OXIDE GAS CONTAINED IN COMBUSTION EXHAUST GAS FROM BOILER.
*12138 APTIC NO. 29685

HIRAO S
DETERMINATION OF AROMATIC HYDROCARBONS EMITTED FROM THE DRY BATTERY PLANT.
12287 APTIC NO. 29862

HIRAYAMA T
THE INFLUENCE OF AIR POLLUTION UPON THE DISCOLORATION OF THE DYED STUFF AND THE DECREASE OF TENSILE STRENGTH OF SOME FIBERS.
12612 APTIC NO. 29717
INVESTIGATION OF ACTIVATION ANALYSIS OF TRACE MERCURY IN GAS BY RADIOISOTOPE TRACER METHOD.
12328 APTIC NO. 29770

HIRAYAMA Y
STUDY ON THE EFFECTS OF AIR POLLUTION ON HUMAN BODY--WITH SPECIAL REFERENCE TO OBJECTIVE, COMPARATIVE STUDY OF ALL THE INHABITANTS BY CHEST X-RAY RINDINGS.
12554 APTIC NO. 29904

HIRO M
ON PLUMBIC POLLUTION OF MUNICIPAL ATMOSPHERE--BEHAVIORS OF PLUMBIC COMPOUND AS AEROSOL.
12431 APTIC NO. 30073

HITOMI K
ON AIR POLLUTION IN MIZUSHIMA AREA.
12390 APTIC NO. 29895

HITOSUGI M
STUDY ON THE EFFECTS OF AIR POLLUTION ON HUMAN BODY--WITH SPECIAL REFERENCE TO OBJECTIVE, COMPARATIVE STUDY OF ALL THE INHABITANTS BY CHEST X-RAY RINDINGS.
12554 APTIC NO. 29904

HOCKWALD R S
AIRBORNE INFLUENZA PR8-A VIRUS INFECTIONS IN ACTIVELY IMMUNIZED MICE.
12167 APTIC NO. 29718

HOGETSU K
ENVIRONMENT PRESERVATION FROM THE ECOLOGICAL POINT OF VIEW.
*12678 APTIC NO. 29961

HOHNE R F
PROCESS FOR REMOVING SULPHUR FROM GASES.
*12139 APTIC NO. 30049

HOLINKA M
ATMOSPHERIC CORROSION OF THE ELECTROLYTIC NI-CR COATINGS.
12609 APTIC NO. 30039

HOLLANDER H I
VALUE ANALYSIS OF COAL.
*12629 APTIC NO. 30122

HOLMES A
DETERMINATION OF IRON, CHROMIUM, COBALT, NICKEL, AND SCANDIUM IN ASBESTOS BY NEUTRON ACTIVATION ANALYSIS.
*12292 APTIC NO. 30129

HOLTZMAN R B
AUTOMATIC SEQUENTIAL RAIN SAMPLER FOR SCAVENGING STUDIES.
12423 APTIC NO. 29741

HOMMA K
COLLECTION EFFICIENCIES OF GLASS FIBER FILTERS FOR EACH SIZE OF LEAD AEROSOLS.
*12140 APTIC NO. 29664

HONDA H
METHOD FOR MANUFACTURING SPHERICAL ACTIVE CARBON FROM COAL.
*12141 APTIC NO. 29988

HONDA T
ON COMPOSITION AND LEAD CONTENT OF COMMERCIAL GASOLINE.
12048 APTIC NO. 29936
STUDIES ON AIR POLLUTION DUE TO AUTOMOBILE EXHAUST. REPORT 15: AIR POLLUTION AT THE VICINITY OF BOOTHS IN MEISHIN HIGHWAY.
12389 APTIC NO. 30075

HORIUCHI K
SOME PLANS FOR FUTURE STUDIES FOR LOW LEVEL OF LEAD ON THE HUMAN BEING.
*12553 APTIC NO. 29815

HORIUCHI N
STUDIES ON PHOTOCHEMICAL REACTION BETWEEN SULFURIC ACID GAS AND ORGANIC COMPOUNDS (2).
12512 APTIC NO. 29463
STUDIES ON PHOTOLYSIS OF NITORGEN OXIDE.
12513 APTIC NO. 29527
PHOTOCHEMICAL REACTION BETWEEN SO2 AND ORGANIC COMPOUNDS (II).
12514 APTIC NO. 29967

HORN K
INTERNATIONAL SYMPOSIUM ON THE HYGIENE OF THE AIR OF THE MEMBER COUNTRIES OF THE COUNCIL FOR MUTUAL ECONOMIC AID.
*12679 APTIC NO. 29593

HOSAKA N
ON THE CONTINUOUS MEASUREMENT AND RECORDING OF OXIDANTS BY ELECTRIC CONDUCTIVITY METHOD.
*12293 APTIC NO. 29758

HOSHIAI T
SEMI-AUTOMATIC DETERMINATION OF LEAD IN WIDE BLOOD.
12565 APTIC NO. 29663

HOSHIKA Y
A FINDING CONCERNING A BASIC INVESTIGATION METHOD ON ODOR POLLUTION SEEN FROM ACTUAL EXPERIENCE. REPORT NO. 2 ON THE STUDIES OF OBNOXIOUS ODOR.
*12294 APTIC NO. 29508

HOSHIZAWA K
EXPERIMENTAL RESEARCH ON LOW EXCESS AIR COMBUSTION IN BOILER BURNING HEAVY OIL ONLY.
*12142 APTIC NO. 29860

HUDSON A
OBSERVATIONS ON THE ELIMINATION OF DUST.
*12143 APTIC NO. 29554

HUERTAS M L
THE STUDY OF THE EVOLUTION OF ATOMIC SIZED PARTICLES IN THE AIR.
12436 APTIC NO. 29946

HUMPHRIES J J
AN SO2 REMOVAL AND RECOVERY PROCESS.
*12630 APTIC NO. 29144

HURTER A
LONG RANGE PLANNING IN AIR RESOURCE MANAGEMENT.
12657 APTIC NO. 30056

HUTCHINSON P
DEPOSITION OF LIQUID OR SOLID DISPERSIONS FROM TURBULENT GAS STREAMS: A STOCHASTIC MODEL.
*12494 APTIC NO. 29873

I

ICHIKAWA T
ON AIR POLLUTION IN MIZUSHIMA AREA.
12390 APTIC NO. 29895

ICHINOSAWA A
EFFECTS OF SOOT AND SMOKE ON THE HEALTH OF SCHOOL CHILDREN.
12556 APTIC NO. 29791
STUDIES ON PROGNOSIS OF CHRONIC BRONCHITIS.
12587 APTIC NO. 29916

IDE Y
TURBULENT DIFFUSION THEORY TAKING TURBULENT BOUNDARY LAYER INTO CONSIDERATION.
12463 APTIC NO. 29822
ON THE DIFFUSION OF AUTO-EXHAUSTED GASES.
12464 APTIC NO. 29850

IGASAKI F
ADHESION TO PIPE S WALL WITH AEROSOL PARTICLES FLOWING IN A PIPE AS TURBULENT FLOW.
12523 APTIC NO. 30071

IHARA M
NEW TREND IN POLLUTIONS COUNTERMEASURES IN THE 70 S.
*12660 APTIC NO. 29507

ILIN K G
USE OF VANADIUM CATALYSTS IN PURIFYING INDUSTRIAL WASTE GASES FROM SULFUR DIOXIDE.
12087 APTIC NO. 29980

IMADA M
AIR POLLUTION.
12324 APTIC NO. 29858

IMAI H
METHOD TO REMOVE HARMFUL SUBSTANCES FROM STACK GAS BY-PRODUCING AMMONIUM SULFATE AND OTHERS (XV) - ACTIVATION ENERGY OF ACTIVATED CARBON FOR SO2 ADSORPTION.
12161 APTIC NO. 29648

IMAI M
EFFECTS OF SOOT AND SMOKE ON THE HEALTH OF SCHOOL CHILDREN.
12556 APTIC NO. 29791

IMAISHI N
ABSORPTION OF SULFUROUS ACID GAS BY WATER SOLUTION OF POTASSIUM PHOSPHATE.
12172 APTIC NO. 29731

IMAMO K
REPORT ON THE INVESTIGATION INTO THE MAINTENANCE AND THE SUPERVISION OF AIR-CLEANING APPARATUS AS AN INDICATION OF AIR POLLUTION.
12122 APTIC NO. 29840

INAGAKI N
ON CONDITIONS FOR PROPER USE OF ACTIVATED CARBON AS AN AIR PURIFICATION AGENT (2) - ITS EFFICIENCY FOR REMOVAL OF SO2 GAS.
12113 APTIC NO. 29496

INAMI T
TO PREVENT HEAVY OIL COMBUSTION GAS FROM PRODUCING BLACK SMOKE.
12213 APTIC NO. 29930

INOUE A
MEASUREMENTS OF AIRBORNE DUST.
12288 APTIC NO. 29885

INOUE H
ON THE EFFECT OF ACCOMPANYING GASES IN QUANTITATIVE ANALYSIS OF HYDROGEN SULFIDE USING METHYLENE BLUE.
12343 APTIC NO. 29505

INOUE S
EQUALIZATION OF PARTICLE TRANSFER IN TRANSFERABLE STRATUM.
*12144 APTIC NO. 29928

ISHIBASHI Y
STUDY ON DESULFURIZATION BY THE INJECTION OF LIMESTONE POWDER INTO FURNACE OF OIL FIRING BOILER (PART I).
*12145 APTIC NO. 30131

ISHIHARA Y
STUDY ON MECHANISM OF REACTION WITH SULFUR DIOXIDE OF LIMESTONE POWDER BLOWN INTO COMBUSTION GAS.
*12146 APTIC NO. 29479

ISHII T
GAS CHROMATOGRAPHIC ANALYSIS OF BENZENE AND TOLUENE IN AUTOMOBILE EXHAUST GAS.
*12295 APTIC NO. 29907

ISHIKAWA E
ACTIVATED CARBON INDUSTRY AND PROBLEMS IN FUTURE - SPHERICAL ACTIVATED CARBON FROM COAL.
12235 APTIC NO. 29942

ISHIKAWA N
STUDY ON THE EFFECTS OF AIR POLLUTION ON HUMAN BODY--WITH SPECIAL REFERENCE TO OBJECTIVE, COMPARATIVE STUDY OF ALL THE INHABITANTS BY CHEST X-RAY RINDINGS.
12554 APTIC NO. 29904

ISHIKAWA T
STUDY ON THE DIRECT DESULFURIZATION OF HEAVY OIL.
12159 APTIC NO. 29989

ISHINISHI S
SEASONAL VARIATION OF THE CONCENTRATION OF HEAVY METALS IN SUSPENDED DUST ON THE MAIN STREETS.
*12384 APTIC NO. 30025

ISIZAKI M
STUDIES ON LEAD CHROMATE OBTAINED FROM TETRAALKYL LEAD IN LEADED GASOLINE. I. X-RAY DIFFRACTION TESTS OF THE LEAD CHROMATE CRYSTALS.
*12296 APTIC NO. 29810

ISURUGI S
EXPERIMENTAL STUDY ON PLASTICS INCINERATION.
*12017 APTIC NO. 29841

ITO H
HEAVY METAL POLLUTION IN THE ONAHAMA INDUSTRIAL AREA. 1ST REPORT. DISTRIBUTION OF HEAVY METALS IN SOIL.
12006 APTIC NO. 29539
INVESTIGATION OF HEAVY METAL POLLUTION IN IWAKI CITY.
12007 APTIC NO. 29787

ITO J
STUDIES ON AIR POLLUTION AND BRONCHIAL ASTHMA. REPORT 1.
12548 APTIC NO. 29925

ITO K
ESSO/UNION FUEL OIL HYDRODESULFURIZATION PROCESSES. PART II: COMMERCIAL EXPERIENCE WITH GO-FINING.
12096 APTIC NO. 29926

IWAI K
STUDY ON THE EFFECTS OF AIR POLLUTION ON HUMAN BODY--WITH SPECIAL REFERENCE TO OBJECTIVE, COMPARATIVE STUDY OF ALL THE INHABITANTS BY CHEST X-RAY RINDINGS.
12554 APTIC NO. 29904

IWASAKI T
EXPERIMENTAL STUDY ON PLASTICS INCINERATION.
12017 APTIC NO. 29841

STUDY ON THE EFFECTS OF AIR POLLUTION ON HUMAN BODY--WITH SPECIAL REFERENCE TO OBJECTIVE, COMPARATIVE STUDY OF ALL THE INHABITANTS BY CHEST X-RAY RINDINGS.
*12554 APTIC NO. 29904

METHOD TO ARREST AND REMOVE WHITE SMOKE PRODUCED FROM MOLTEN ZINC PLATING PROCESS.
12135 APTIC NO. 29940

J

JACKSON M R
SCAVENGING BY SNOW AND ICE CRYSTALS.
12456 APTIC NO. 29707

JACOBS B E A
PULSED EMISSION CHIMNEY.
12082 APTIC NO. 29626

JAMIESON J K
THE ROLE OF INDUSTRY--AIR QUALITY.
*12661 APTIC NO. 29845

JASKE R T
A NATIONAL ESTIMATE OF PUBLIC AND INDUSTRIAL HEAT REJECTION REQUIREMENTS BY DECADES THROUGH THE YEAR 2000 AD.
*12018 APTIC NO. 29272

JOENSUU O I
FOSSIL FUELS AS A SOURCE OF MERCURY POLLUTION.
*12019 APTIC NO. 30017

JOHNSON A R
H-OIL AS A TOOL FOR LOW SULFUR FUEL PRODUCTION.
12126 APTIC NO. 29808

JOHNSTON J E
PROGRESS REPORT. JANUARY-DECEMBER 1969.
*12555 APTIC NO. 28850

JONES P F
QUENCHING OF NAPHTHALENE LUMINESCENCE BY OXYGEN AND NITRIC OXIDE.
*12495 APTIC NO. 29611

JORDAN S
FRACTIONATION OF OXYGEN ISOTOPES BETWEEN NO AND H20.
*12297 APTIC NO. 30114

JORISSEN H D
ATTEMPT AT A THERMODYNAMIC SOLUTION: AUTOMOBILE EXHAUST GASES.
*12147 APTIC NO. 29906

JOYNER R W
THE ADSORPTION OF CARBON MONOXIDE ON CU(001) LEED AND AUGER EMISSION STUDIES.
*12496 APTIC NO. 29799

JUST J
BENZPYRENE AND OTHER AROMATIC HYDROCARBONS IN THE DUST OF POLISH TOWNS.
*12385 APTIC NO. 29569

K

KABE T
CATALYST FOR HEAVY OIL DESULFURIZATION.
12224 APTIC NO. 29977

KADOKURA S
ACTIVATED CARBON INDUSTRY AND PROBLEMS IN FUTURE - SPHERICAL ACTIVATED CARBON FROM COAL.
12235 APTIC NO. 29942

KADOWAKI T
PREVENTION OF AIR POLLUTION ON IRON FOUNDRY.
12178 APTIC NO. 29602

KAEHLING G
ALUMINUM MATERIAL FOR THE CHEMICAL INDUSTRY.
12624 APTIC NO. 29922

KAGAYA K
EFFECTS OF SOOT AND SMOKE ON THE HEALTH OF SCHOOL CHILDREN.
12556 APTIC NO. 29791

KAHN D C
AIR POLLUTION: CONTROLLED OPERATION OF A NSSC RECOVERY FURNACE.
12127 APTIC NO. 29621

KAJIWARA S
EFFECTS OF SOOT AND SMOKE ON THE HEALTH OF SCHOOL CHILDREN.
*12556 APTIC NO. 29791

KAMAZAWA H
ON THE DIFFUSION OF AUTO-EXHAUSTED GASES.
12464 APTIC NO. 29850

KAMIYAMA K
AIR POLLUTION AND ATMOSPHERIC CORROSION.
*12613 APTIC NO. 29222

KANEKAWA A
THEORETICAL CONSIDERATION IN THE MEASUREMENT OF SMOKE PARTICLES BY OWL (II) - EFFECT OF DISPERSION.
*12298 APTIC NO. 29483

ON DOUBLE HEAD-CUT CONES TYPE CENTRIFUGAL DUST COLLECTOR.
*12148 APTIC NO. 30070

KANEKO K
ADSORPTIVITY OF DESULFURIZING ACTIVATED CARBON FOR SULFUROUS ACID GAS (II) - EFFECT OF THE ADSORPTION - RINSING PROCESS ON THE ADSORPTIVITY.
12238 APTIC NO. 29788

ADSORPTIVITY OF DESULFURIZING ACTIVATED CARBON FOR SULFUROUS ACID GAS (I). PERFORMANCE VARIATION OF ACTIVATED CARBON IN PILOT PLANT.
12206 APTIC NO. 29939

KANEOKA C
FILTRATION OF MULTI-DISPERSING AEROSOL UNDER THE FORCE OF GRAVITY.
12115 APTIC NO. 29730

KANEOKA Y
ADHESION TO PIPE S WALL WITH AEROSOL PARTICLES FLOWING IN A PIPE AS TURBULENT FLOW.
12523 APTIC NO. 30071

KANNO K
A REPORT OF THE PERIODIC MEASUREMENT OF SOOT AND DUST, AND SULFUR OXIDES IN THE AIR AROUND THE HOSPITAL.
12381 APTIC NO. 29794

KARPUKHIN O N
THE REACTION OF OZONE WITH SOLID POLYSTYRENE.
12505 APTIC NO. 29666

KARSH R
THE ROLE OF AIR POLLUTION ON CHRONIC OBSTRUCTIVE PULMONARY DISEASE.
12539 APTIC NO. 30136

KARWETA S
AIR POLLUTION BY LEAD AND ZINC IN THE AREA OF COMBINED METALLURGICA WORKS AND ITS INFLUENCE ON VEGETATION AND SOIL.
12031 APTIC NO. 29572

KASSASOW P
STUDIES ON THE INFLUENCE OF AIR POLLUTION ON THE HEALTH OF THE PEOPLE AT BELOSLAV, DISTRICT OF VARNA, PEOPLE S REPUBLIC OF BULGARIA.
*12557 APTIC NO. 29573

KASSNER J L JR
THERMAL-DIFFUSION CHAMBERS AS CLOUD-NUCLEI COUNTERS.
12452 APTIC NO. 29714

KASTENHUBER H
THE REACTION KINETICS OF MERCAPTAN WITH OZONE IN THE PPM RANGE.
12497 APTIC NO. 30016

KATANAKHOVA S K
CATALYTIC OXIDATION OF CARBON MONOXIDE IN THE PRESENCE OF RECENTLY SYNTHESIZED PLATINUM COMPLEXES.
12117 APTIC NO. 29896

KATO H
ACTIVATED CARBON INDUSTRY AND PROBLEMS IN FUTURE - SPHERICAL ACTIVATED CARBON FROM COAL.
12235 APTIC NO. 29942

KATO J
REACTOR DEVICE FOR HEAVY OIL DESULFURIZATION.
*12149 APTIC NO. 29987

STUDY ON THE DIRECT DESULFURIZATION OF HEAVY OIL.
12159 APTIC NO. 29989

KATO T
ACTIVATED CARBON INDUSTRY AND PROBLEMS IN FUTURE - SPHERICAL ACTIVATED CARBON FROM COAL.
12235 APTIC NO. 29942

KATSUMA K
METHOD TO MANUFACTURE CATALYST FOR CLEANING OF EXHAUST GAS FROM INTERNAL COMBUSTION ENGINES.
*12150 APTIC NO. 29937

KATTAWAR G W
RADIANCE AND POLARIZATION OF LIGHT REFLECTED FROM OPTICALLY THICK CLOUDS.
*12429 APTIC NO. 29915

KATZ M
INTERSOCIETY COMMITTEE METHODS FOR AMBIENT AIR SAMPLING AND ANALYSIS. PREFACE.
*12662 APTIC NO. 29491

KAWAGUCHI H
THE INFLUENCE OF AIR POLLUTION UPON THE DISCOLORATION OF THE DYED STUFF AND THE DECREASE OF TENSILE STRENGTH OF SOME FIBERS.
12612 APTIC NO. 29717

KAWAGUCHI T
STUDY ON THE EFFECTS OF AIR POLLUTION ON HUMAN BODY--WITH SPECIAL REFERENCE TO OBJECTIVE, COMPARATIVE STUDY OF ALL THE INHABITANTS BY CHEST X-RAY RINDINGS.
12554 APTIC NO. 29904

AUTOMATIC MEASURING APPARATUS OF FLUORIDE GASSES IN AIR.
*12299 APTIC NO. 29966

KAWAMURA T
LEAD CONCENTRATION IN YOKOHAMA AIR.
12399 APTIC NO. 29814

KAWANO T
EFFECTS OF SOOT AND SMOKE ON THE HEALTH OF SCHOOL CHILDREN.
12556 APTIC NO. 29791

KAWASHIMA S
ELECTRIC DUST COLLECTION DEVICE.
*12151 APTIC NO. 29819

KAWASHIMA T
STUDIES ON THE SMOKE DAMAGE OF TREES. (I) ON THE ACUTE DAMAGE SYMPTOMS BY THE SO2.
12607 APTIC NO. 29976

KAWATA K
DETERMINATION OF AROMATIC HYDROCARBONS EMITTED FROM THE DRY BATTERY PLANT.
12287 APTIC NO. 29862

KAZAKOVA M D
DEVELOPMENT OF A METHOD FOR DETERMINING SULPHUR OXIDES IN FLUE GASES.
12265 APTIC NO. 30084

KEFELI A A
DEGRADATION OF POLYMERS IN REACTIVE GASES.
12617 APTIC NO. 29472

THE REACTION OF OZONE WITH SOLID POLYSTYRENE.
12505 APTIC NO. 29666

KEIER N P
INFRARED SPECTROSCOPIC STUDY OF THE CATALYTIC OXIDATION OF CARBON MONOXIDE TO CARBON DIOXIDE ON MANGANESE DIOXIDE.
12105 APTIC NO. 30091

KELLER T
THE EFFECTS OF AIR POLLUTION ON VEGETATION.
*12600 APTIC NO. 30003

KEMKA R
PARALLEL DETERMINATION OF NICKEL AND COBALT IN URINE AND ATMOSPHERE.
*12300 APTIC NO. 29953

KERKER M
COLLECTION EFFICIENCY OF WATER DROPLETS IN AGCL AEROSOL.
*12430 APTIC NO. 29687

KERNS K K
EXHAUST SYSTEM.
12165 APTIC NO. 29723

KERTESZ M
THE PRESENT RESULTS OF DETERMINATIONS OF 3,4-BENZPYRENE IN THE AIR OVER BUDAPEST.
*12631 APTIC NO. 29590

KHALAFALLA S E
CATALYTIC REDUCTION OF SULFUR DIOXIDE ON IRON-ALUMINA BIFUNCTIONAL CATALYSTS.
*12152 APTIC NO. 30064

KHORGUANI V G
INTERNATIONAL CONFERENCE ON CONDENSATION NUCLEI AND ICE-FORMING NUCLEI.
12454 APTIC NO. 29699

KHRGIAN A KH
INTERNATIONAL CONFERENCE ON CONDENSATION NUCLEI AND ICE-FORMING NUCLEI.
12454 APTIC NO. 29699

KIDO N
ON REGENERATION OF ACTIVATED CARBON HAVING ADSORBED SO2.
12173 APTIC NO. 29732

KIKUCHI M
BASIC RESEARCH ON SMOKE DESULFURIZATION BY LIME-METALS, 1ST REPORT - DESULFURIZATION EFFECT BY ADDITION OF METAL.
*12154 APTIC NO. 29478

BASIC RESEARCH ON SMOKE DESULFURIZATION BY LIME-METALS, 2ND REPORT - EFFECT OF METAL ADDITION ON CALCINATION OF LIME.
*12153 APTIC NO. 29080

KIMURA K
REPORT ON THE INVESTIGATION INTO THE MAINTENANCE AND THE SUPERVISION OF AIR-CLEANING APPARATUS AS AN INDICATION OF AIR POLLUTION.
12122 APTIC NO. 29840

EFFICIENCY OF FILTERS FOR RADIOACTIVE AEROSOL.
*12155 APTIC NO. 29768

KING E
INTERPRETATION OF RESULTS OF EXAMINATION OF AIR.
*12386 APTIC NO. 29545

KIRCHNER K
THE REACTION KINETICS OF MERCAPTAN WITH OZONE IN THE PPM RANGE.
*12497 APTIC NO. 30016

KISHI H
ON EXAMPLE OF PRACTICAL APPLICATION OF DUST COLLECTOR FOR ELECTRIC FURNACE FOR FERRO-ALLOY.
*12632 APTIC NO. 29892

KISHIMOTO K
STUDIES ON AIR POLLUTION AND BRONCHIAL ASTHMA. REPORT 1.
12548 APTIC NO. 29925

KITA H
SOME HEALTH SURVEY RESULTS OF UNDERGROUND GARAGE WORKERS.
12568 APTIC NO. 30074

KITAGAWA T
REPORT FOR THE INVESTIGATION ON THE METHOD OF SO2 TEST.
*12301 APTIC NO. 29381

KITAHATA M
EFFECTS OF SOOT AND SMOKE ON THE HEALTH OF SCHOOL CHILDREN.
12556 APTIC NO. 29791

KITASE M
THE TENDENCY OF AIR POLLUTION AT NAGOYA CITY OBSERVED FROM THE WEIGHT OF FALLING DUST.
12396 APTIC NO. 30076

KIYONO S
ANALYSIS OF HC OF LOW GRADE IN ATMOSPHERE.
12391 APTIC NO. 29482

KIYOURA H
METHOD TO REMOVE HARMFUL SUBSTANCES FROM STACK GAS BY-PRODUCING AMMONIUM SULFATE AND OTHERS (XV) - ACTIVATION ENERGY OF

ACTIVATED CARBON FOR SO2 ADSORPTION.
12161 APTIC NO. 29648

KJELDSEN K
INTRODUCTION AND GENERAL DESCRIPTION OF THE STUDY AND OF THE PROCEDURES FOR PROLONGED EXPOSURE TO CARBON MONOXIDE AND HYPOXIA.
12530 APTIC NO. 29503
INFLUENCE OF PROLONGED CARBON MONOXIDE EXPOSURE AND ALTITUDE HYPOXIA ON SERUM LIPIDS IN MAN.
*12558 APTIC NO. 29529
INFLUENCE OF PROLONGED CARBON MONOXIDE EXPOSURE AND HIGH ALTITUDE ON THE COMPOSITION OF BLOOD AND URINE IN MAN.
*12559 APTIC NO. 29613
CAPILLARY FILTRATION RATE ON THE HUMAN CALF DURING EXPOSURE TO CARBON MONOXIDE AND HYPOXIA (3454 M).
12578 APTIC NO. 29804

KLAUSEN K
CIRCULATION, METABOLISM, AND VENTILATION DURING PROLONGED EXPOSURE TO CARBON MONOXIDE AND TO HIGH ALTITUDE.
*12560 APTIC NO. 29869

KLIMEK M
REDUCTION OF MAGNESIUM SULPHATE BY CARBON MONOXIDE.
*12498 APTIC NO. 29943

KOBAYAKAWA T
PURIFICATION DEVICE FOR AUTOMOTIVE EXHAUST GAS.
*12156 APTIC NO. 29439

KOBAYASHI J
EFFECT OF AIR AND WATER POLLUTION ON AGRICULTURAL PRODUCTS BY CD, PB, ZN ATTRIBUTED TO MINE REFINERY IN ANNAKA CITY, GUNMA PREFECTURE.
*12601 APTIC NO. 27489

KOBAYASHI M
ACTIVATED CARBON INDUSTRY AND PROBLEMS IN FUTURE - SPHERICAL ACTIVATED CARBON FROM COAL.
12235 APTIC NO. 29942

KOBAYASHI T
EXPERIMENTAL STUDIES ON THE HEALTH EFFECTS OF AUTO EXHAUST GAS IN LOW CONCENTRATIONS. (REPORT 1) PRELIMINARY EXPERIMENT.
12589 APTIC NO. 29921

KOBAYASHI Y
URBAN POLLUTION BY AUTOMOBILE EXHAUST GAS.
*12387 APTIC NO. 29744
AIR POLLUTION BY TRACE METALS IN JAPAN.
*12561 APTIC NO. 29816
DISTRIBUTION OF LEAD IN THE AIR NEAR CITY ROADS.
*12388 APTIC NO. 29918
ON PLUMBIC POLLUTION OF MUNICIPAL ATMOSPHERE--BEHAVIORS OF PLUMBIC COMPOUND AS AEROSOL.
*12431 APTIC NO. 30073

KOBOZEV N I
EXPLOSIVE OXIDATION OF NITROUS OXIDE MIXED WITH OZONE.
12511 APTIC NO. 27268

KOBUCHI A
BASIC RESEARCH ON SMOKE DESULFURIZATION BY LIME-METALS, 1ST REPORT - DESULFURIZATION EFFECT BY ADDITION OF METAL.
12154 APTIC NO. 29478
BASIC RESEARCH ON SMOKE DESULFURIZATION BY LIME-METALS, 2ND REPORT - EFFECT OF METAL ADDITION ON CALCINATION OF LIME.
12153 APTIC NO. 29080

KOECK I
THERMODYNAMICS OF THE AEROSOLS IN THE ATMOSPHERE.
12428 APTIC NO. 29785

KOIZUMI M
AIR POLLUTANTS GENERATED IN INTRA-FURNACE COMBUSTION.
*12020 APTIC NO. 29532

KOK R
LAB TESTS SHOW ELECTRIC FIELD MIGHT HELP REDUCE ENGINE KNOCK.
12088 APTIC NO. 30036

KOLESNIKOVA T KH
TRACE ELEMENTS IN ATMOSPHERIC PRECIPITATION AROUND THE OTKAZNOE RESERVOIR.
12432 APTIC NO. 29910

KOLPAKOV YU D
DETERMINATION OF THE DISPERSION OF SCATTERING NEAR THE CRITICAL POINT USING THE SCATTERED LIGHT INDICATRIX.
*12499 APTIC NO. 30051

KONDO S
STEAM-SMOKE MIST CONTACT DEVICE.
12174 APTIC NO. 29792

KONNO N
EXAMINATION OF QUANTITATIVE ANALYSIS METHOD OF FLUORINE IN VEGETABLE SAMPLES.
*12302 APTIC NO. 29467

KONOSU H
TRIAL CONSTRUCTION OF NON-DISPERSION TYPE VISIBLE LIGHT GAS ANALYZE AND DETERMINATION OF NITROGEN DIOXIDE, CHLORINE, AND BROMINE.
*12303 APTIC NO. 29762

KONOVALOV G S
TRACE ELEMENTS IN ATMOSPHERIC PRECIPITATION AROUND THE OTKAZNOE RESERVOIR.
*12432 APTIC NO. 29910

KOREI J
MEASUREMENT OF GAS CONCENTRATION UTILIZING LIGHT SCATTERING BY PARTICULATES.
12352 APTIC NO. 29461

KORENBERG YA G
HIGH-CONCENTRATION SULFUR DIOXIDE FROM CALCINING PYRITES IN THE DKSM FURNACE.
*12157 APTIC NO. 29982

KORN M
PARTICLE SIZE MEASURING WITH THE TELEVISION MICROSCOPE QUANTIMET FOR SIZES MINUS 4 MICRONS.
*12304 APTIC NO. 29512

KOSHI S
COLLECTION EFFICIENCIES OF GLASS FIBER FILTERS FOR EACH SIZE OF LEAD AEROSOLS.
12140 APTIC NO. 29664

KOTANIDA K
EXPERIMENTAL RESEARCH ON LOW EXCESS AIR COMBUSTION IN BOILER BURNING HEAVY OIL ONLY.
12142 APTIC NO. 29860

KOTERA Y
MANUFACTURING OF INDUSTRIAL CATALYST COMPRISING ALUMINA AS CARRIER. (Arumina o tantai to shita kogyo shokubai no seizo). Text in Japanese. Preprint, Japan Industrial Technology Assoc., Tokyo, 12p., 1970. 5 refs. (Presented at the Industrial Catalyst Seminar Tokyo, Japan, Nov. 9, 1970.)
*12158 APTIC NO. 29755
STUDY ON THE DIRECT DESULFURIZATION OF HEAVY OIL.
*12159 APTIC NO. 29989

KOVALENKO N P
METHODS OF DETERMINING SULFUR DIOXIDE (REVIEW).
*12305 APTIC NO. 29801

KOWALCZYK T
SELECTION OF FILTRATION EQUIPMENT FOR SULPHUR AND POTASH PROCESSING.
*12160 APTIC NO. 29902

KOYAMA T
ON DAMAGE TO PLANTS BY FLUORIDES IN EXHAUST GAS FROM TILE MANUFACTURING FACTORY.
12606 APTIC NO. 29597

KRAUSE L A
THE ANALYSIS OF MERCURY IN URINE, BLOOD, WATER, AND AIR.
*12306 APTIC NO. 29652

KRAUSE U
DISSIPATION AND PRECIPITATION OF DUST EMITTED BY A STEELWORKS.
12466 APTIC NO. 29829
DISSIPATION OF SO2 GENERATED IN A STEELWORK INTO THE GROUND LAYER OF THE ATMOSPHERE.
12467 APTIC NO. 29867

KREMER H
STUDY OF THE COMBUSTION OF PARTLY PRE-MIXED LAMINAR NATURAL GAS FLAMES.
*12021 APTIC NO. 29948

KRISTENSEN J H
CAPILLARY FILTRATION RATE ON THE HUMAN CALF DURING EXPOSURE

TO CARBON MONOXIDE AND HYPOXIA (3454 M).
12578 APTIC NO. 29804

KROST K J
GAS CHROMATOGRAPHY OF REACTIVE SULFUR GASES IN AIR AT THE PARTS- PER-BILLION LEVEL.
12347 APTIC NO. 30065

KUBO J
HYDROGENIZATION DESULFURIZATION METHOD OF HEAVY HC.
12189 APTIC NO. 29603

KUBO K
THE TENDENCY OF AIR POLLUTION AT NAGOYA CITY OBSERVED FROM THE WEIGHT OF FALLING DUST.
12396 APTIC NO. 30076

KUBO M
EFFECTS OF SOOT AND SMOKE ON THE HEALTH OF SCHOOL CHILDREN.
12556 APTIC NO. 29791
STUDIES ON AIR POLLUTION AND BRONCHIAL ASTHMA. REPORT 1.
12548 APTIC NO. 29925

KUBOTA T
CONTROL OF EXHAUST GAS EMISSION OF MITSUBISHI COLT GALANT.
12228 APTIC NO. 29901
SOME HEALTH SURVEY RESULTS OF UNDERGROUND GARAGE WORKERS.
12568 APTIC NO. 30074

KUPEL R E
TENTATIVE METHOD OF ANALYSIS FOR BERYLLIUM CONTENT OF ATMOSPHERIC PARTICULATE MATTER.
*12307 APTIC NO. 29487

KURIKI Y
REACTOR DEVICE FOR HEAVY OIL DESULFURIZATION.
12149 APTIC NO. 29987

KURITA J
CATALYST FOR HEAVY OIL DESULFURIZATION.
12224 APTIC NO. 29977

KURITA M
INVESTIGATION OF HEAVY OIL DESULFURIZATION IN FIXED-BED CONTACT REACTORS.
12196 APTIC NO. 29931
HYDRODESULFURIZATION OF HEAVY QUALITY OIL, RESIDUAL OIL, ETC.. (Jushitsuyu, zansayu to no suisokadatsuryuho). Text in Japanese. (Ishikawajima-Harima Heavy Industries (Japan)) Japan. Pat. Sho 46-819. 3p., Jan. 9, 1971. (Appl. Dec. 25, 1967, claims not given).
*12218 APTIC NO. 29933
QUANTITATIVE ANALYSIS OF NO IN ATMOSPHERE - ON CHANGES IN SALTZMAN COEFFICIENT WITH CHANGE IN COMPOSITION OF SALTZMAN REAGENTS.
*12308 APTIC NO. 29480

KURODA Y
PRACTICAL ANALYTICAL METHOD OF EXHAUST REFLUX EFFECT ON NOX EMISSION CONTROL.
12102 APTIC NO. 29499

KURONUMA H
METHOD TO REMOVE HARMFUL SUBSTANCES FROM STACK GAS BY-PRODUCING AMMONIUM SULFATE AND OTHERS (XV) - ACTIVATION ENERGY OF ACTIVATED CARBON FOR SO2 ADSORPTION.
*12161 APTIC NO. 29648

KUTUZOV V N
DECONTAMINATION OF POLLUTED AIR FROM HARD PITCH PRODUCTION PLANT.
12022 APTIC NO. 30026

KUTUZOVA L N
DECONTAMINATION OF POLLUTED AIR FROM HARD PITCH PRODUCTION PLANT.
*12022 APTIC NO. 30026

KUWATA T
DISPOSAL OF HC FROM OIL CONTAINING RESIDUAL OIL AFTER DISTILLATION USING HYDROGEN.
*12162 APTIC NO. 30095

KUYAMA S
THE GAS CHROMATOGRAPHIC DETERMINATION OF PESTICIDES. (PART 3) DETERMINATION OF RESIDUES OF ORGANOPHOSPHORUS PESTICIDES.
12349 APTIC NO. 30134

KUYATT C E
INELASTIC ELECTRON SCATTERING FROM NITROUS OXIDE BETWEEN 5.0 AND 20.0 EV ENERGY LOSS.
12521 APTIC NO. 27460

KYUNO T
THE MECHANISM OF ATMOSPHERIC RUSTING AND THE EFFECT OF CU AND P ON THE RUST FORMATION OF LOW ALLOY STEELS.
12615 APTIC NO. 29631

L

LAEMMERT A
COMMISSION FOR INDUSTRIAL DUST PROBLEMS IN GERMANY.
*12520 APTIC NO. 29555

LAFONTAINE J
LEGAL ASPECTS OF AIR POLLUTION IN BELGIUM AND OTHER NEIGHBORING COUNTRIES.
12659 APTIC NO. 30040

LAKTIONOV A G
MICROSTRUCTURE OF ATMOSPHERIC SURFACE LAYER AEROSOLS.
*12433 APTIC NO. 29668

LAMONTANGE R A
CARBON MONOXIDE IN RAINWATER.
12460 APTIC NO. 29880

LANE J A
SOME RESULTS OF LIDAR PROBING OF THE TROPOSHERE.
*12434 APTIC NO. 30105

LANGAN L
NEW EYE ON THE AIR.
12412 APTIC NO. 29644

LANGER G
PARTICLE AND DEUTERIUM CONTENT IN SNOW.
12449 APTIC NO. 29775

LANGLEY K F
THE ULTRA-VIOLET PHOTOLYSIS OF OZONE IN THE PRESENCE OF MOLECULAR OXYGEN.
*12500 APTIC NO. 29778
THE ULTRA-VIOLET PHOTOLYSIS OF OZONE IN THE PRESENCE OF WATER VAPOUR.
*12435 APTIC NO. 30012

LANGS R K
AUTOMATIC SEQUENTIAL RAIN SAMPLER FOR SCAVENGING STUDIES.
12423 APTIC NO. 29741

LARSEN J K
RENAL FUNCTION DURING PROLONGED EXPOSURE TO HYPOXIA AND CARBON MONOXIDE. I. GLOMERULAR FILTRATION AND PLASMA FLOW.
12576 APTIC NO. 29615
RENAL FUNCTION DURING PROLONGED EXPOSURE TO HYPOXIA AND CARBON MONOXIDE. II. ELECTROLYTE HANDLING.
12577 APTIC NO. 29805

LASKIN S
A NEW DUST-GENERATING SYSTEM FOR INHALATION STUDIES.
12486 APTIC NO. 29653

LATHAM J
CONTINUOUS CHARGED CLOUD-PARTICLE SAMPLER.
12451 APTIC NO. 29712

LAWRENCE G
EMISSION CONTROL BY EXHAUST MANIFOLD REACTOR--AN INITIAL STUDY FOR SMALL ENGINES.
*12163 APTIC NO. 29629

LAWRENCE R W
ANALYZERS FOR MONITORING AIR QUALITY IN POLLUTION.
12272 APTIC NO. 29634

LAWTHER P J
SOME RECENT TOPICS IN AIR POLLUTION AND HEALTH IN LONDON.
*12562 APTIC NO. 29882

LEATHER G R
ABSCISSION: THE PHYTOGERONTOLOGICAL EFFECTS OF ETHYLENE.
12592 APTIC NO. 30060

LEBEDEV V P
EXPLOSIVE OXIDATION OF NITROUS OXIDE MIXED WITH OZONE.
12511 APTIC NO. 27268

LEBLANC F
RELATION BETWEEN INDUSTRIALIZATION AND THE DISTRIBUTION AND GROWTH OF EPIPHYTIC LICHENS AND MOSSES IN MONTREAL.
*12602 APTIC NO. 29998

LEE G K
CONTROL OF POLLUTANT EMISSION AND SULPHURIC ACID CORROSION FROM COMBUSTION OF RESIDUAL FUEL OIL. PART I: LOW-PRESSURE HEATING BOILERS WITH MECHANICAL ATOMIZING BURNERS.
*12164 APTIC NO. 30055

LEEDS J V
SIGNAL PROCESSING TECHNIQUES FOR ESTIMATING PARAMETERS OF CERTAIN BIOLOGICAL MODELS.
12570 APTIC NO. 29997

LEGNER M
STATE AND INSPECTION OF PROTECTION OF ATMOSPHERE AND LEGAL REGULATIONS VALID TODAY.
*12664 APTIC NO. 29828

LEITHE W
DETERMINATION AND EVALUATION OF LOW CONCENTRATIONS OF INDUSTRIAL AIR POLLUTANTS.
*12309 APTIC NO. 30014

LELIEVRE G
STUDY OF TRACES OF HEAVY ORGANIC PRODUCTS IN FUEL COMBUSTION GASES. (Etude des traces de produits organiques lourds dans les fumees de combustion de fuel). Text in French. Rev. Gen. Thermique (Paris), 10(111):223-238, March 1971. 90 refs.
*12310 APTIC NO. 29766
EXHAUST SYSTEM.
*12165 APTIC NO. 29723

LESSING L
NEW WAYS TO MORE POWER WITH LESS POLLUTION.
*12166 APTIC NO. 29658

LESTZ S S
COMBUSTION REGULARITY A KEY TO SPARK-IGNITION ENGINE EMISSIONS REDUCTION? Preprint, Academia R. P. R., Bucharest, 15p., 1970. 4 refs. (Presented at the Internal Combustion Engines Conference, 2nd International, Bucharest (Rumania), 1970.)
12023 APTIC NO. 27641
A METHOD OF VERIFYING THE COEFFICIENTS A-SUB-N AND B-SUB-N OF THE MIE THEORY OF LIGHT SCATTERING BY NONABSORBING ISOTROPIC SPHERES.
12492 APTIC NO. 29488

LINDEN L H
JET AIRCRAFT AIR POLLUTANT PRODUCTION AND DISPERSION.
12016 APTIC NO. 30130

LINNENBOM V J
CARBON MONOXIDE IN RAINWATER.
12460 APTIC NO. 29880

LIPPMAN M
REVIEW OF CASCADE IMPACTORS FOR PARTICLE SIZE ANALYSIS AND A NEW CALIBRATION FOR THE CASELLA CASCADE IMPACTOR.
*12311 APTIC NO. 29270

LODGE J P JR
FLUOROMETRIC DETERMINATION OF BROMINE: APPLICATION TO MEASUREMENT OF BROMINE AEROSOLS.
12255 APTIC NO. 29811
FILTER METHOD FOR THE MEASUREMENT OF ATMOSPHERIC HYDROGEN SULFIDE.
12330 APTIC NO. 30004

LOOSLI C G
HISTOPATHOLOGIC FINDINGS IN RATS EXPOSED TO AMBIENT AND FILTERED AIR.
12550 APTIC NO. 29715
AIRBORNE INFLUENZA PR8-A VIRUS INFECTIONS IN ACTIVELY IMMUNIZED MICE.
*12167 APTIC NO. 29718
PULMONARY CHANGES IN 7000 MICE FOLLOWING PROLONGED EXPOSURE TO AMBIENT AND FILTERED LOS ANGELES AIR.
12551 APTIC NO. 29763

LORANSKI D N
THE TASKS OF THE PUBLIC HYGIENE SYSTEM OF THE USSR IN THE FIELD OF THE PURIFICATION OF THE AIR.
*12665 APTIC NO. 29594

LORENZEN J A
ATMOSPHERIC CORROSION OF SILVER.
*12614 APTIC NO. 29951

LOSEVA N N
HIGH-CONCENTRATION SULFUR DIOXIDE FROM CALCINING PYRITES IN THE DKSM FURNACE.
12157 APTIC NO. 29982

LOW M J D
FOURIER TRANSFORM SPECTROMETERS.
*12313 APTIC NO. 29476
INFRARED FOURIER TRANSFORM SPECTROSCOPY IN FLAVOR ANALYSIS III.
*12312 APTIC NO. 29056

LOWE D B
THE ROLE OF TRACE METALS IN CHEMICAL CARCINOGENESIS: ASBESTOS CANCERS.
12543 APTIC NO. 29993

LOWES F J
MUFFLER FOR REMOVING PARTICULATE LEAD FROM EXHAUST GASES OF INTERNAL COMBUSTION ENGINES.
*12168 APTIC NO. 29920

LUNA R E
ESTIMATION OF VARIANCE OF AIR SAMPLER DATA BASED ON REPLICATE SAMPLES.
*12314 APTIC NO. 29642

LUND H F
A PHILOSOPHY OF INDUSTRIAL AIR POLLUTION CONTROL.
*12666 APTIC NO. 29485

LUNDGREN D
TENTATIVE METHOD OF ANALYSIS FOR DUSTFALL FROM THE ATMOSPHERE.
12344 APTIC NO. 30119

M

MAARTMANN S
ELECTROSTATIC PRECIPITATORS FOR CEMENT AND LIME INDUSTRY.
*12169 APTIC NO. 29735

MACDONALD N
ENVIRONMENTAL CONTROL AND THE INSURANCE SAFETY ENGINEER.
*12170 APTIC NO. 29115

MACK R A
AIR POLLUTION: CONTROLLED OPERATION OF A NSSC RECOVERY FURNACE.
12127 APTIC NO. 29621

MADDOCK J E L
PARTICLE SIZE DISTRIBUTION IN AEROSOLS FORMED FROM GASEOUS REACTANTS.
12268 APTIC NO. 29854

MADELAINE G
FORMATION OF PARTICLES BY PHOTOLYSIS AND RADIOLYSIS.
12407 APTIC NO. 29809

MADSEN H
CIRCULATION, METABOLISM, AND VENTILATION DURING PROLONGED EXPOSURE TO CARBON MONOXIDE AND TO HIGH ALTITUDE.
12560 APTIC NO. 29869

MAEKAWA K
REPORT ON THE INVESTIGATION INTO THE MAINTENANCE AND THE SUPERVISION OF AIR-CLEANING APPARATUS AS AN INDICATION OF AIR POLLUTION.
12122 APTIC NO. 29840

MAENO M
DAMAGE TO PLANTS BY AIR POLLUTANTS.
*12603 APTIC NO. 29746

MAISONNEUVE J D
MEASURES TAKEN BY THE REGIONAL SOCIAL SECURITY ADMINISTRATION OF LIMOGES TO REDUCE THE RISKS OF SILICOSIS.
*12171 APTIC NO. 29561

MALAN E
SPECIAL COLUMN CONFIGURATION FOR THE ANALYSIS OF SOME INORGANIC GASES AND LIGHT HYDROCARBONS.
*12315 APTIC NO. 30029

MALORNY G
EFFECTS OF LOW CARBON MONOXIDE CONCENTRATIONS IN MAN.
12533 APTIC NO. 29609

MANITA M D
NEW METHODS OF DETERMINING AIR POLLUTION.
*12316 APTIC NO. 29595

MAREK VL
ATMOSPHERIC CORROSION OF THE ELECTROLYTIC NI-CR COATINGS.
12609 APTIC NO. 30039

MARIAN P
RESEARCH ON THE LEAD INTOXICATION OF THE GALLINACEANS.
12597 APTIC NO. 30033

MARKHOTSKY YA L
EFFECT OF LONG-TERM JOINT ACTION OF CARBON MONOXIDE, NITROGEN DIOXIDE AND AMMONIUM ON REQUIREMENTS OF ALBINO RATS IN VITAMIN B6.
12572 APTIC NO. 29753

MARTIN G F
PROGRESS REVIEW NO. 62: COMBUSTION OF SINGLE DROPLETS AND SIMPLIFIED SPRAY SYSTEMS.
12493 APTIC NO. 29803

MARTY A M
THE STUDY OF THE EVOLUTION OF ATOMIC SIZED PARTICLES IN THE AIR.
*12436 APTIC NO. 29946

MARZO L
NOMOGRAPH GIVES NO OXIDATION.
11993 APTIC NO. 27535

MASAHIRO H
DISTRIBUTION OF LEAD IN THE AIR NEAR CITY ROADS.
12388 APTIC NO. 29918

MASEK V
QUANTITATIVE ALDEHYDE DETERMINATION IN THE AIR OF WORKING PLACES.
*12317 APTIC NO. 30023

MASLOVSKY R YA
AN ASPIRATION INSTALLATION OF HIGH EFFICIENCY FOR COLLECTING SAMPLES OF RADIOACTIVE AEROSOLS FROM THE ATMOSPHERE.
*12318 APTIC NO. 29670

MASUDA Y
ON THE MEASUREMENT AND ABSOLUTE CALIBRATION OF THE STRENGTH OF SOLAR RADIATION ENERGY.
12348 APTIC NO. 29863

MATHIEU M V
COMPARISON OF THE CATALYTIC ACTIVITY OF MANGANESE DIOXIDE OF ELECTROLYTIC ORIGIN AND OF MANGANESE HYDROXIDE IN THE OXIDATION OF CARBON OXIDES. IV. ADSORPTION AND DESORPTION OF THE REAGENTS AND THE PRODUCTS OF THE REACTION ON MANGANESE HYDROXIDE.
12192 APTIC NO. 29506

MATIJEVIC E
COLLECTION EFFICIENCY OF WATER DROPLETS IN AGCL AEROSOL.
12430 APTIC NO. 29687

MATSEN J M
SCALE-UP OF LABORATORY FLUID-BED DATA: THE SIGNIFICANCE OF SLUG FLOW.
*12501 APTIC NO. 29494

MATSUDA S
ON DAMAGE TO PLANTS BY FLUORIDES IN EXHAUST GAS FROM TILE MANUFACTURING FACTORY.
12606 APTIC NO. 29597

MATSUMURA M
ABSORPTION OF SULFUROUS ACID GAS BY WATER SOLUTION OF POTASSIUM PHOSPHATE.
*12172 APTIC NO. 29731

MATSUSHIMA J
ON COMPOSITE HARM TO PLANTS BY SULFUROUS ACID GAS AND OXIDANT.
*12604 APTIC NO. 29671

MATSUYAMA T
ON REGENERATION OF ACTIVATED CARBON HAVING ADSORBED SO2.
*12173 APTIC NO. 29732

MATSUZAKI K
STEAM-SMOKE MIST CONTACT DEVICE.
*12174 APTIC NO. 29792

MATSUZAKI N
STUDY ON THE EFFECTS OF AIR POLLUTION ON HUMAN BODY--WITH SPECIAL REFERENCE TO OBJECTIVE, COMPARATIVE STUDY OF ALL THE INHABITANTS BY CHEST X-RAY RINDINGS.
12554 APTIC NO. 29904

MATUSHITA H
A SHORT TERM DETERMINATION OF BENZO(A)PYRENE AND BENZO(K) FLUORANTHENE IN AIR POLLUTANTS.
*12319 APTIC NO. 29965

MAXWELL R B
PRODUCTION OF GASES OF KNOWN SPECIFIC ACTIVITY IN A REACTOR FOR CALIBRATING GASEOUS EFFLUENT MONITORS.
12264 APTIC NO. 29848

MAZIARKA S
BENZPYRENE AND OTHER AROMATIC HYDROCARBONS IN THE DUST OF POLISH TOWNS.
12385 APTIC NO. 29569

ON THE RELATIONSHIP BETWEEN AIR POLLUTION AND MORBIDITY AND MORTALITY OF THE POPULATION IN POLISH TOWNS.
*12563 APTIC NO. 29575

MCCAULL J
NEW EYE ON THE AIR.
12412 APTIC NO. 29644

MCCORMACK J D
SCAVENGING OF AEROSOL PARTICLES BY SPRAYS.
*12437 APTIC NO. 29711

MCCUNE D C
METABOLIC EFFECTS OF ATMOSPHERIC FLUORIDES ON PLANTS.
*12605 APTIC NO. 29616

MCGRATH W D
THE ULTRA-VIOLET PHOTOLYSIS OF OZONE IN THE PRESENCE OF MOLECULAR OXYGEN.
12500 APTIC NO. 29778

THE ULTRA-VIOLET PHOTOLYSIS OF OZONE IN THE PRESENCE OF WATER VAPOUR.
12435 APTIC NO. 30012

MCKEE C S
THE ADSORPTION OF CARBON MONOXIDE ON CU(001) LEED AND AUGER EMISSION STUDIES.
12496 APTIC NO. 29799

MCMILLAN R E
A COMPUTERIZED METHOD FOR SIZE CHARACTERIZATION OF ATMOSPHERIC AEROSOLS BY THE SCANNING ELECTRON MICROSCOPE.
12266 APTIC NO. 30019

MELLEMGAARD K
OXYGEN AFFINITY AND ACID-BASE STATUS OF HUMAN BLOOD DURING EXPOSURE TO HYPOXIA AND CARBON MONOXIDE.
12567 APTIC NO. 29528

PLASMA VOLUME AND VASCULAR PERMEABILITY DURING HYPOXIA AND CARBON MONOXIDE EXPOSURE.
12582 APTIC NO. 29614

MERCER T T
CHARGES ON DROPLETS PRODUCED BY ATOMIZATION OF SOLUTIONS.
12482 APTIC NO. 29919

MERONEY R N
GASEOUS PLUME DIFFUSION ABOUT ISOLATED STRUCTURES OF SIMPLE GEOMETRY. (ANNUAL PROGRESS REPORT).
*12438 APTIC NO. 29584

METGUNOVA L F
CATALYTIC OXIDATION OF CARBON MONOXIDE IN THE PRESENCE OF RECENTLY SYNTHESIZED PLATINUM COMPLEXES.
12117 APTIC NO. 29896

METVEEV K I
CATALYTIC OXIDATION OF CARBON MONOXIDE IN THE PRESENCE OF RECENTLY SYNTHESIZED PLATINUM COMPLEXES.
12117 APTIC NO. 29896

MEYER W E
TRANSPORTATION EMISSIONS.
*12175 APTIC NO. 29605

COMBUSTION REGULARITY A KEY TO SPARK-IGNITION ENGINE EMISSIONS REDUCTION? Preprint, Academia R. P. R., Bucharest, 15p., 1970. 4 refs. (Presented at the Internal Combustion Engines Conference, 2nd International, Bucharest (Rumania), 1970.)
12023 APTIC NO. 27641

INELASTIC ELECTRON SCATTERING FROM NITROUS OXIDE BETWEEN 5.0 AND 20.0 EV ENERGY LOSS.
12521 APTIC NO. 27460

MIKULKA P
LOW LEVEL CARBON MONOXIDE EXPOSURE AND HUMAN PSYCHOMOTOR PERFORMANCE.
12573 APTIC NO. 29473

MILLER R L
CALCULATION OF EXCESS AIR FOR COMBUSTION PROCESSES USING O2-TO-N2 RATIO.
*12176 APTIC NO. 29796

MILLS A L
LEAD IN THE ENVIRONMENT.
*12564 APTIC NO. 29493

MIRONOV A M
REMOVAL OF CHLORINE FROM GASES.
*12177 APTIC NO. 29802

MIRUMYANTS S O
CALCULATION METHODS OF SPECTRAL ABSORPTION OF INFRARED RADIATION BY ATMOSPHERIC GASES.
12323 APTIC NO. 30103

MISAWA T
THE MECHANISM OF ATMOSPHERIC RUSTING AND THE EFFECT OF CU AND P ON THE RUST FORMATION OF LOW ALLOY STEELS.
*12615 APTIC NO. 29631

MISHIMA M
SEMI-AUTOMATIC DETERMINATION OF LEAD IN WIDE BLOOD.
*12565 APTIC NO. 29663

MISHIMOTO K
ABSORPTION OF SULFUROUS ACID GAS BY WATER SOLUTION OF POTASSIUM PHOSPHATE.
12172 APTIC NO. 29731

MITAMURA T
BASIC RESEARCH ON SMOKE DESULFURIZATION BY LIME-METALS, 1ST REPORT - DESULFURIZATION EFFECT BY ADDITION OF METAL.
12154 APTIC NO. 29478

MITCHELL E R
CONTROL OF POLLUTANT EMISSION AND SULPHURIC ACID CORROSION FROM COMBUSTION OF RESIDUAL FUEL OIL. PART I: LOW-PRESSURE HEATING BOILERS WITH MECHANICAL ATOMIZING BURNERS.
12164 APTIC NO. 30055

MITSUMURA T
BASIC RESEARCH ON SMOKE DESULFURIZATION BY LIME-METALS, 2ND REPORT - EFFECT OF METAL ADDITION ON CALCINATION OF LIME.
12153 APTIC NO. 29080

MITSUSAWA T
OXIDATION OF NITROGEN MONOXIDE.
*12320 APTIC NO. 29676

MIURA H
EFFECTS OF ATMOSPHERIC LEAD ON TRAFFIC POLICEMEN IN A MEDIUM SIZED CITY.
*12566 APTIC NO. 29958

MIURA S
POLLUTION CONTROL AT THE SAGAMIHARA PLANT OF OUR TOKYO MACHINERY WORKS.
12199 APTIC NO. 29821

MIWA C
PREVENTION OF AIR POLLUTION ON IRON FOUNDRY.
*12178 APTIC NO. 29602

MIYAKE T
ABSORPTION OF SULFUROUS ACID GAS BY WATER SOLUTION OF POTASSIUM PHOSPHATE.
12172 APTIC NO. 29731

MIZOBUCHI I
DEVICE TO HOLD IN PLACE ATOMIZER NOZZLES OF A WASHER DEVICE FOR SULFUR OXIDE GAS CONTAINED IN COMBUSTION EXHAUST GAS FROM BOILER.
12138 APTIC NO. 29685

MIZOGUCHI M
STUDIES ON AIR POLLUTION AND BRONCHIAL ASTHMA. REPORT 1.
12548 APTIC NO. 29925

MONTET M
GENERAL REMARKS ABOUT DUST SAMPLING.
*12321 APTIC NO. 29564

MOORE A P
PARTICLE SIZE DISTRIBUTION IN AEROSOLS FORMED FROM GASEOUS REACTANTS.
12268 APTIC NO. 29854

MOORE H
AIR POLLUTION.
12324 APTIC NO. 29858

MORGAN A
DETERMINATION OF IRON, CHROMIUM, COBALT, NICKEL, AND SCANDIUM IN ASBESTOS BY NEUTRON ACTIVATION ANALYSIS.
12292 APTIC NO. 30129

MORI M
ELECTROSTATIC FILTER USING DIELECTRIC FILTER MATERIAL.
12515 APTIC NO. 29596

MORI T
STUDY ON THE EFFECTS OF AIR POLLUTION ON HUMAN BODY--WITH SPECIAL REFERENCE TO OBJECTIVE, COMPARATIVE STUDY OF ALL THE INHABITANTS BY CHEST X-RAY RINDINGS.
12554 APTIC NO. 29904

MORIGUCHI M
EVALUATION TRIALS OF URBAN AIR POLLUTION MODELS.
*12439 APTIC NO. 29697

MORII F
EFFECT OF AIR AND WATER POLLUTION ON AGRICULTURAL PRODUCTS BY CD, PB, ZN ATTRIBUTED TO MINE REFINERY IN ANNAKA CITY, GUNMA PREFECTURE.
12601 APTIC NO. 27489

MORIK J
THE TASKS OF THE PUBLIC HEALTH SYSTEM IN THE FIELD OF THE HYGIENE OF THE AIR IN THE PEOPLE S REPUBLIC OF HUNGARY.
*12667 APTIC NO. 29592

MORIKAWA K
METHOD TO MANUFACTURE CATALYST FOR DESULFURIZATION BY HYDROGEN ADDITION OF LIQUID HYDROCARBON.
12234 APTIC NO. 29974

MORIKAWA Y
EXAMINATION OF QUANTITATIVE ANALYSIS METHOD OF FLUORINE IN VEGETABLE SAMPLES.
12302 APTIC NO. 29467

MORINAGA K
INITIATION RATE FOR SHOCK-HEATED HYDROGEN-OXYGEN CARBON MONOXIDE- ARGON MIXTURES AS DETERMINED BY OH INDUCTION TIME MEASUREMENTS.
12490 APTIC NO. 29700

MORITA M
STUDY ON DESULFURIZATION BY THE INJECTION OF LIMESTONE POWDER INTO FURNACE OF OIL FIRING BOILER (PART I).
12145 APTIC NO. 30131

MORITA S
STUDY ON THE EFFECTS OF AIR POLLUTION ON HUMAN BODY--WITH SPECIAL REFERENCE TO OBJECTIVE, COMPARATIVE STUDY OF ALL THE INHABITANTS BY CHEST X-RAY RINDINGS.
*12179 APTIC NO. 29905

MORITZ K H
ESSO/UNION FUEL OIL HYDRODESULFURIZATION PROCESSES. PART I: PROCESS APPLICATIONS AND DEVELOPMENT.
*12180 APTIC NO. 29954

MORLIN Z
THE PRESENT RESULTS OF DETERMINATIONS OF 3,4-BENZPYRENE IN THE AIR OVER BUDAPEST.
12631 APTIC NO. 29590

MORSE R D
THE ADIABATIC FLASH PHOTOLYSIS OF NO2 AND SO2.
12259 APTIC NO. 29630

MOSER E
MEASUREMENT OF GASEOUS AND PARTICULATE FLUORINE EMISSIONS.
*12322 APTIC NO. 29738

MOSKALENKO N I
EXPERIMENTAL FUNCTIONS OF INTEGRAL ABSORPTION IN H2O, AND CO2, N2O, CH4, CO, NO VAPOUR BANDS.
*12502 APTIC NO. 29964
CALCULATION METHODS OF SPECTRAL ABSORPTION OF INFRARED RADIATION BY ATMOSPHERIC GASES.
*12323 APTIC NO. 30103

MOSS O R
SHAPE FACTORS FOR AIRBORNE PARTICLES.
*12503 APTIC NO. 30085

MOYA F
TERATOGENIC EFFECTS OF ANESTHETIC AGENTS: NITROUS OXIDE.
12584 APTIC NO. 28919

MROS E
ON THE RELATIONSHIP BETWEEN AIR POLLUTION AND MORBIDITY AND MORTALITY OF THE POPULATION IN POLISH TOWNS.
12563 APTIC NO. 29575

MUEHLBERG E
WASTE GAS RECIRCULATION IN COMBUSTION ENGINES, PRIMARILY DIESEL ENGINES.
*12181 APTIC NO. 29962

MUELLER P K
AIR POLLUTION.
*12324 APTIC NO. 29858

MUKHLENOV I P
REMOVAL OF CHLORINE FROM GASES.
12177 APTIC NO. 29802

MULHAUSEN R O
OXYGEN AFFINITY AND ACID-BASE STATUS OF HUMAN BLOOD DURING EXPOSURE TO HYPOXIA AND CARBON MONOXIDE.
*12567 APTIC NO. 29528
RENAL FUNCTION DURING PROLONGED EXPOSURE TO HYPOXIA AND CARBON MONOXIDE. I. GLOMERULAR FILTRATION AND PLASMA FLOW.
12576 APTIC NO. 29615
RENAL FUNCTION DURING PROLONGED EXPOSURE TO HYPOXIA AND CARBON MONOXIDE. II. ELECTROLYTE HANDLING.
12577 APTIC NO. 29805

MULIK J D
AUTOMATED ANALYSIS SYSTEMS MAKES KRAFT EMISSION MEASUREMENTS EASY.
*12325 APTIC NO. 29913
GAS CHROMATOGRAPHY OF REACTIVE SULFUR GASES IN AIR AT THE PARTS- PER-BILLION LEVEL.
12347 APTIC NO. 30065

MUNAKATA K
PERFORMANCE OF CYCLONE FOR LOW-PRESSURE AIR FLOW.
*12182 APTIC NO. 29728

MURAMATSU K
CATALYST FOR HEAVY OIL DESULFURIZATION.
12224 APTIC NO. 29977

MURAMATSU Y
STUDIES ON AIR POLLUTION AND BRONCHIAL ASTHMA. REPORT 1.
12548 APTIC NO. 29925

MURAMOTO S
EFFECT OF AIR AND WATER POLLUTION ON AGRICULTURAL PRODUCTS BY CD, PB, ZN ATTRIBUTED TO MINE REFINERY IN ANNAKA CITY, GUNMA PREFECTURE.
12601 APTIC NO. 27489

MURATA J
LUMINESCT SPECTROMETER ANALYSIS METHOD OF QUANTITATIVE ANALYSIS OF METALS IN DUST FLOATING IN ATMOSPHERE.
12279 APTIC NO. 29466

MURATA M
STUDIES ON AIR POLLUTION AND BRONCHIAL ASTHMA. REPORT 1.
12548 APTIC NO. 29925

MURAYAMA T
AN EXPERIMENTAL STUDY ON THE PERFORMANCE OF A MULTIFUEL ENGINE. PART 3. AN ATTEMPT OF M-COMBUSTION APPLIED TO A SWIRL CHAMBER.
*12183 APTIC NO. 29520

MURIAS F
EVOLUTION OF THE ATMOSPHERIC CONTAMINATION IN MADRID IN 1969.
12371 APTIC NO. 30089

MUROYA H
SOME HEALTH SURVEY RESULTS OF UNDERGROUND GARAGE WORKERS.
*12568 APTIC NO. 30074

MUROZUMI M
LEAD MEN HEADING TOWARD DESTRUCTION--SPREADING OMINOUS METAL POLLUTIONS.
*12569 APTIC NO. 29789

MUSHA S
GAS CHROMATOGRAPHIC ANALYSIS OF BENZENE AND TOLUENE IN AUTOMOBILE EXHAUST GAS.
12295 APTIC NO. 29907

N

NADEN R A
SIGNAL PROCESSING TECHNIQUES FOR ESTIMATING PARAMETERS OF CERTAIN BIOLOGICAL MODELS.
*12570 APTIC NO. 29997

NAGAI H
GAS CHROMATOGRAPHIC ANALYSIS OF TRACES OF CO AND CO2.
*12326 APTIC NO. 29938

NAGAOKA S
SOME HEALTH SURVEY RESULTS OF UNDERGROUND GARAGE WORKERS.
12568 APTIC NO. 30074

NAGAYAMA S
HEAVY METAL POLLUTION IN THE ONAHAMA INDUSTRIAL AREA. 1ST REPORT. DISTRIBUTION OF HEAVY METALS IN SOIL.
12006 APTIC NO. 29539
INVESTIGATION OF HEAVY METAL POLLUTION IN IWAKI CITY.
12007 APTIC NO. 29787

NAGELSCHMIDT G
COMPARATIVE STUDY OF PERMISSIBLE LIMITS OF AIR DUSTINESS IN VARIOUS COUNTRIES.
*12639 APTIC NO. 29543
RESULTS OF COMPARATIVE TESTS ON QUARTZ CONTENT OBTAINED FROM LABORATORIES USING VARIOUS TECHNIQUES OF DETERMINATION.
*12327 APTIC NO. 29552

NAKADA K
FILTRATION OF MULTI-DISPERSING AEROSOL UNDER THE FORCE OF GRAVITY.
12115 APTIC NO. 29730

NAKADOI T
MEASURING METHOD OF OZONE BY CHEMILUMINECENCE.
12337 APTIC NO. 29665

NAKAGAWA Y
ON DAMAGE TO PLANTS BY FLUORIDES IN EXHAUST GAS FROM TILE MANUFACTURING FACTORY.
*12606 APTIC NO. 29597

NAKAJIMA F'
STUDY ON THE EFFECTS OF AIR POLLUTION ON HUMAN BODY--WITH SPECIAL REFERENCE TO OBJECTIVE, COMPARATIVE STUDY OF ALL THE INHABITANTS BY CHEST X-RAY RINDINGS.
12554 APTIC NO. 29904

NAKAJIMA Y
PRACTICAL ANALYTICAL METHOD OF EXHAUST REFLUX EFFECT ON NOX EMISSION CONTROL.
12102 APTIC NO. 29499

NAKAMURA K
STUDY ON THE EFFECTS OF AIR POLLUTION ON HUMAN BODY--WITH SPECIAL REFERENCE TO OBJECTIVE, COMPARATIVE STUDY OF ALL THE INHABITANTS BY CHEST X-RAY RINDINGS.
12554 APTIC NO. 29904

NAKAMURA S
THE GAS CHROMATOGRAPHIC DETERMINATION OF PESTICIDES. (PART 3) DETERMINATION OF RESIDUES OF ORGANOPHOSPHORUS PESTICIDES.
12349 APTIC NO. 30134

NAKAMURA Y
A REPORT OF THE PERIODIC MEASUREMENT OF SOOT AND DUST, AND SULFUR OXIDES IN THE AIR AROUND THE HOSPITAL.
12381 APTIC NO. 29794

NAKAO Y
STUDY ON THE STRENGTH OF SUPER-HIGH ASSEMBLED MULTI-CYLINDER TYPE STACK.
*12184 APTIC NO. 30093

NAKASHIMA S
EFFECT OF AIR AND WATER POLLUTION ON AGRICULTURAL PRODUCTS BY CD, PB, ZN ATTRIBUTED TO MINE REFINERY IN ANNAKA CITY, GUNMA PREFECTURE.
12601 APTIC NO. 27489

NAKASHIMA Y
STUDIES ON THE SMOKE DAMAGE OF TREES. (I) ON THE ACUTE DAMAGE SYMPTOMS BY THE SO2.
*12607 APTIC NO. 29976

NAKAYAMA N
EFFECTS OF SOOT AND SMOKE ON THE HEALTH OF SCHOOL CHILDREN.
12556 APTIC NO. 29791

STUDIES ON PROGNOSIS OF CHRONIC BRONCHITIS.
12587 APTIC NO. 29916

NAM K
PULMONARY COMPLICATIONS OF ASBESTOS EXPOSURE.
12552 APTIC NO. 29221

NAOI Y
ON CONDITIONS FOR PROPER USE OF ACTIVATED CARBON AS AN AIR PURIFICATION AGENT (2) - ITS EFFICIENCY FOR REMOVAL OF SO2 GAS.
12113 APTIC NO. 29496

NARITOMI M
PERFORMANCE OF CHARCOAL-IMPREGNATED FILTER PAPER TYPE CP-20 FOR COLLECTING AIRBORNE RADIOIODINE.
*12185 APTIC NO. 29870

NARSKIKH O G
FORMATION OF FOG ON THE NUCLEI OF HUMIDITY CONDENSATION.
12453 APTIC NO. 29636

NELLIST G R
ATMOSPHERIC POLLUTION AT MODERN COKE WORKS.
12380 APTIC NO. 29257

NELSON N
SOME RECENT TOPICS IN AIR POLLUTION AND HEALTH IN NEW YORK.
*12668 APTIC NO. 29817

NEWHALL H K
THE AUTOMOBILE AND AIR POLLUTION.
*12186 APTIC NO. 29633

NICHOLAS E J H
ATMOSPHERIC POLLUTION IN HEADINGS FOLLOWING SHOTFIRING.
*12024 APTIC NO. 29678

NICOTRA C
STUDY OF POLYCYCLIC HYDROCARBONS FIXED ON ATMOSPHERIC DUSTS.
12270 APTIC NO. 29851

NIEHAUS A
EFFECTS OF ATMOSPHERIC FACTORS AND OF SO2 AND AIRBORNE DUST EMISSIONS ON INTRABRONCHIAL FLOW RESISTANCE AND INTRATHORACAL GAS VOLUME OF SOUND AND SICK MEN.
*12571 APTIC NO. 29048

NIEPENBERG H P
THE INDUSTRIAL FIRING SYSTEMS OF THE 1970'S.
*12025 APTIC NO. 28968

NIESLER R A
INDUSTRIAL EMISSIONS: AN ANALYSIS OF SOME KEY FACTORS.
*12669 APTIC NO. 29469

NISHIDA K
DETERMINATION OF POLYNUCLEAR AROMATICS IN SUSPENDED PARTICLES.
12393 APTIC NO. 29462

ON COMPOSITION AND LEAD CONTENT OF COMMERCIAL GASOLINE.
12048 APTIC NO. 29936

STUDIES ON AIR POLLUTION DUE TO AUTOMOBILE EXHAUST. REPORT 15: AIR POLLUTION AT THE VICINITY OF BOOTHS IN MEISHIN HIGHWAY.
*12389 APTIC NO. 30075

NISHIKAWA T
ON THE BASIC LAW FOR ENVIRONMENTAL POLLUTION CONTROL, NOISE CONTROL LAW, WATER POLLUTION PREVENTION LAW, AND AIR POLLUTION PREVENTION LAW.
*12670 APTIC NO. 29509

NISHIMOTO K
DESULFURIZATION OF EXHAUST GAS.
12078 APTIC NO. 29927

NISHIMURA K
INVESTIGATION OF ACTIVATION ANALYSIS OF TRACE MERCURY IN GAS BY RADIOISOTOPE TRACER METHOD.
*12328 APTIC NO. 29770

NISHIMUTA T
STUDIES ON AIR POLLUTION AND BRONCHIAL ASTHMA. REPORT 1.
12548 APTIC NO. 29925

NISHIYAMA K
HEAVY METAL POLLUTION IN THE ONAHAMA INDUSTRIAL AREA. 1ST REPORT. DISTRIBUTION OF HEAVY METALS IN SOIL.
12006 APTIC NO. 29539

INVESTIGATION OF HEAVY METAL POLLUTION IN IWAKI CITY.
12007 APTIC NO. 29787

NIZHEGORODOV V M
EFFECT OF LONG-TERM JOINT ACTION OF CARBON MONOXIDE, NITROGEN DIOXIDE AND AMMONIUM ON REQUIREMENTS OF ALBINO RATS IN VITAMIN B6.
*12572 APTIC NO. 29753

NOGAMI T
ON A DUST-COLLECTING DEVICE FOR A FERROSILICON FURNACE.
12219 APTIC NO. 30086

NOMURA H
CONTROL OF EXHAUST GAS EMISSION OF MITSUBISHI COLT GALANT.
12228 APTIC NO. 29901

NOMURA K
DISPOSAL OF HC FROM OIL CONTAINING RESIDUAL OIL AFTER DISTILLATION USING HYDROGEN.
12162 APTIC NO. 30095

NORCO J E
LONG RANGE PLANNING IN AIR RESOURCE MANAGEMENT.
12657 APTIC NO. 30056

NORDEN H
MODERN OIL BURNING TECHNOLOGY AS DISPLAYED ON THE INTHERM IN STUTTGART AND THE 6.ISH IN FRANKFURT 1971.
*12187 APTIC NO. 29824

NORKINA L A
RESISTANCE OF PHASES INVOLVED IN MASS TRANSFER DURING ABSORPTION OF A READILY SOLUBLE GAS IN A VENTURI SCRUBBER.
*12188 APTIC NO. 29968

NORTON R V
METHANESULFENYL CHLORIDE. V. THE SPONTANEOUS DECOMPOSITION OF METHANESULFENYL CHLORIDE AND METHYLSULFUR TRICHLORIDE.
12485 APTIC NO. 29674

NOWAK F
CONSIDERATIONS IN THE CONSTRUCTION OF LARGE REFUSE INCINERATORS.
*12026 APTIC NO. 29547

NULMAN F S
DETERMINATION OF RUTIN AEROSOL IN THE AIR.
*12329 APTIC NO. 29806

NURUZZAMAAN A S M
PROGRESS REVIEW NO. 62: COMBUSTION OF SINGLE DROPLETS AND SIMPLIFIED SPRAY SYSTEMS.
12493 APTIC NO. 29803

O

O KEEFE A E
GAS CHROMATOGRAPHY OF REACTIVE SULFUR GASES IN AIR AT THE PARTS- PER-BILLION LEVEL.
12347 APTIC NO. 30065

OCHIAI S
EXPERIMENTAL STUDIES ON THE HEALTH EFFECTS OF AUTO EXHAUST GAS IN LOW CONCENTRATIONS. (REPORT 1) PRELIMINARY EXPERIMENT.
12589 APTIC NO. 29921

ODONNELL R D
LOW LEVEL CARBON MONOXIDE EXPOSURE AND HUMAN PSYCHOMOTOR PERFORMANCE.
*12573 APTIC NO. 29473

RECENT RESEARCH INTO THE EFFECT OF LOW LEVEL CARBON MONOXIDE EXPOSURE ON PSYCHOMOTOR PERFORMANCE IN HEALTHY HUMANS.
*12574 APTIC NO. 29846

OELERT H H
VEHICLE EMISSIONS.
*12027 APTIC NO. 29894

OGATA M
ON AIR POLLUTION IN MIZUSHIMA AREA.
*12390 APTIC NO. 29895

OGAWA K
CATALYST FOR HEAVY OIL DESULFURIZATION.
12224 APTIC NO. 29977

OGAWA M
CATALYST FOR HEAVY OIL DESULFURIZATION.
12224 APTIC NO. 29977

OGAWA S
STUDIES ON THE SMOKE DAMAGE OF TREES. (I) ON THE ACUTE DAMAGE SYMPTOMS BY THE SO2.
12607 APTIC NO. 29976

OGUCHI Y
HYDROGENIZATION DESULFURIZATION METHOD OF HEAVY HC.
*12189 APTIC NO. 29603
DISPOSAL OF HC FROM OIL CONTAINING RESIDUAL OIL AFTER DISTILLATION USING HYDROGEN.
12162 APTIC NO. 30095

OHMORI K
LEAD CONCENTRATION IN YOKOHAMA AIR.
12399 APTIC NO. 29814

OHNO T
LEAD CONCENTRATION IN YOKOHAMA AIR.
12399 APTIC NO. 29814

OKAMOTO H
ESTIMATION OF GROUND LEVEL CONCENTRATION BY SMOKE-DIFFUSION WIND TUNNELS.
12462 APTIC NO. 29820

OKITA T
ANALYSIS OF HC OF LOW GRADE IN ATMOSPHERE.
*12391 APTIC NO. 29482
QUALITATIVE ANALYSIS OF EXHAUST GAS FROM FISH MEAL PLANT.
*12028 APTIC NO. 29662
FILTER METHOD FOR THE MEASUREMENT OF ATMOSPHERIC HYDROGEN SULFIDE.
*12330 APTIC NO. 30004

OKUNO T
PROBLEMS OF PUBLIC NUISANCE CAUSED BY BAD ODORS IN HYOGO PREFECTURE.
*12029 APTIC NO. 29599
SOME PROBLEMS ON THE OFFENSIVE ODOR IN HYOGO PREFECTURE.
*12030 APTIC NO. 29842
ON THE REACTIVITY OF AMINES WITH OZONE.
*12190 APTIC NO. 29978

OLIN J G
PIEZOLECTRIC-ELECTROSTATIC AEROSOL MASS CONCENTRATION MONITOR.
*12331 APTIC NO. 30061

OLKHOVSKAYA Z K
DETERMINATION OF RUTIN AEROSOL IN THE AIR.
12329 APTIC NO. 29806

OLSEN R W
EXHAUST EMISSIONS FROM HEAVY DUTY VEHICLES.
*12332 APTIC NO. 27631

OMORI K
EXPERIMENTAL STUDIES ON THE HEALTH EFFECTS OF AUTO EXHAUST GAS IN LOW CONCENTRATIONS. (REPORT 1) PRELIMINARY EXPERIMENT.
12589 APTIC NO. 29921

ORITO Y
CATALYST FOR HEAVY OIL DESULFURIZATION.
12224 APTIC NO. 29977

OSE H
REACTOR DEVICE FOR HEAVY OIL DESULFURIZATION.
12149 APTIC NO. 29987

OSHIMA H
EFFECTS OF SOOT AND SMOKE ON THE HEALTH OF SCHOOL CHILDREN.
12556 APTIC NO. 29791

OSHIMA T
REACTOR DEVICE FOR HEAVY OIL DESULFURIZATION.
12149 APTIC NO. 29987

OSSINZEWA W P
ON THE PROBLEM OF THE COMBINED EFFECTS OF SULFUR DIOXIDE AND BENZPYRENE ON THE ORGANISMS OF TEST ANIMALS.
12583 APTIC NO. 29585

OTA A
TO PREVENT HEAVY OIL COMBUSTION GAS FROM PRODUCING BLACK SMOKE.
12213 APTIC NO. 29930

OTTEN L
A STUDY OF AIR POLLUTION AROUND A SULPHURIC ACID PLANT.
12374 APTIC NO. 29883

OTTO F
A MEASUREMENT GRID FOR AIR POLLUTION IN THE MOUTH OF THE RIVER RHINE IN ROTTERDAM.
*12333 APTIC NO. 29460

OZAKI S
EFFECTS OF ATMOSPHERIC CONDITIONS ON AUTOMOBILE EXHAUST GAS COMPOSITIONS.
12461 APTIC NO. 29893

OZAKI T
AN EXPERIMENT ON VALVE RECESSION BY NON-LEADED GASOLINE.
12222 APTIC NO. 29656
STUDY ON THE STRENGTH OF SUPERHIGH ASSEMBLED MULTI-CYLINDER TYPE STACK.
12184 APTIC NO. 30093

P

PALUCH J
AIR POLLUTION BY LEAD AND ZINC IN THE AREA OF COMBINED METALLURGICA WORKS AND ITS INFLUENCE ON VEGETATION AND SOIL.
*12031 APTIC NO. 29572

PANCHENKO L N
DETECTION OF THE TOTAL AMOUNT OF ORGANIC SUBSTANCES IN THE DISCHARGED AIR FROM THE PRODUCTION OF SYNTHETIC FATTY ACIDS.
*12334 APTIC NO. 29983

PAPAEVANGELOU G
AIR POLLUTION.
*12575 APTIC NO. 29949

PARDINI J
DESIGN OF AN ELECTROSTATIC PRECIPITATOR USING MODELLING AND SIMULATION TECHNIQUES.
12223 APTIC NO. 29639

PARR J F
PESTICIDES IN AIR. VOLATILIZATION OF SOIL-APPLIED DDT AND DDD FROM FLOODED AND NONFLOODED PLOTS.
12047 APTIC NO. 29620

PARSI E J
AN SO2 REMOVAL AND RECOVERY PROCESS.
12630 APTIC NO. 29144

PAULI B
COMBUSTION PLANT FOR RUBBER-COATED EQUIPMENT, TANKS AND CABLES.
*12191 APTIC NO. 29834

PAULI H G
INTRODUCTION AND GENERAL DESCRIPTION OF THE STUDY AND OF THE PROCEDURES FOR PROLONGED EXPOSURE TO CARBON MONOXIDE AND HYPOXIA.
12530 APTIC NO. 29503
RENAL FUNCTION DURING PROLONGED EXPOSURE TO HYPOXIA AND CARBON MONOXIDE. I. GLOMERULAR FILTRATION AND PLASMA FLOW.
*12576 APTIC NO. 29615
RENAL FUNCTION DURING PROLONGED EXPOSURE TO HYPOXIA AND CARBON MONOXIDE. II. ELECTROLYTE HANDLING.
*12577 APTIC NO. 29805

PEDERSEN E E
RAPID ASSESSMENT OF TESTS OF POLLUTANT EFFECTS IN MAN.
12536 APTIC NO. 29431

PELECH L
THE STUDY OF THE POLLUTED AIR INFLUENCE ON CHILDREN S HEALTH IN RUHRDISTRICT.
12544 APTIC NO. 29899

PERILHON P
STUDY OF POLYCYCLIC HYDROCARBONS FIXED ON ATMOSPHERIC DUSTS.
12270 APTIC NO. 29851

PERKINS R W
IN-CLOUD SCAVENGING ANALYSIS FROM COSMOGENIC RADIONUCLIDE MEASUREMENTS.
*12440 APTIC NO. 29694
STABLE ELEMENTS OF THE ATMOSPHERE AS TRACERS OF PRECIPITATION SCAVENGING.
12445 APTIC NO. 29705

PERLOV E I
METHOD OF CALCULATING EQUILIBRIUM COMPOSITIONS IN INTERACTION OF NITROGEN OXIDES WITH NITRIC ACID SOLUTIONS.
12470 APTIC NO. 29800

PETERS A
COMPUTER APPLICATION IN THE ENVIRONMENTAL SCIENCE ANALYSIS AND CONTROL OF ENVIROMENTAL AIR.
*12335 APTIC NO. 29657

PETERSEN C E
INTRODUCTION AND GENERAL DESCRIPTION OF THE STUDY AND OF THE PROCEDURES FOR PROLONGED EXPOSURE TO CARBON MONOXIDE AND HYPOXIA.
12530 APTIC NO. 29503

PETERSEN E
CIRCULATION, METABOLISM, AND VENTILATION DURING PROLONGED EXPOSURE TO CARBON MONOXIDE AND TO HIGH ALTITUDE.
12560 APTIC NO. 29869

PETERSEN F B
PLASMA VOLUME AND VASCULAR PERMEABILITY DURING HYPOXIA AND CARBON MONOXIDE EXPOSURE.
12582 APTIC NO. 29614
CAPILLARY FILTRATION RATE ON THE HUMAN CALF DURING EXPOSURE TO CARBON MONOXIDE AND HYPOXIA (3454 M).
*12578 APTIC NO. 29804

PETERSON S O
ANALYZERS FOR MONITORING AIR QUALITY IN POLLUTION.
12272 APTIC NO. 29634

PETR B
THE INFLUENCE OF AIR POLLUTION ON PUBLIC HEALTH.
12586 APTIC NO. 29589

PETTY T L
CAN ANYTHING BE DONE FOR EMPHYSEMA? J. Louisiana State Med. Soc., 122(7):216-218, July 1970. 18 refs.
12579 APTIC NO. 30137
TENTATIVE METHOD OF ANALYSIS FOR DUSTFALL FROM THE ATMOSPHERE.
12344 APTIC NO. 30119

PICKWELL G V
THE PHYSIOLOGY OF CARBON MONOXIDE PRODUCTION BY DEEP-SEA COELENTERATES: CAUSES AND CONSEQUENCES.
*12032 APTIC NO. 27292

PIERCE L B
AIR POLLUTION.
12324 APTIC NO. 29858

PIPER J
DESIGN OF NEW SILVER-RECOVERY INCINERATOR.
12008 APTIC NO. 29635

PLASS G N
RADIANCE AND POLARIZATION OF LIGHT REFLECTED FROM OPTICALLY THICK CLOUDS.
12429 APTIC NO. 29915

PLASSMANN E
IT BEGAN WITH THE SMOG IN CALIFORNIA. CALIFORNIA TEST, EUROPEAN TEST--INTERNATIONAL REGULATIONS OF AUTOMOBILE EXHAUST GAS EMISSIONS.
*12640 APTIC NO. 30069

POKHOLOK T V
THE REACTION OF OZONE WITH SOLID POLYSTYRENE.
12505 APTIC NO. 29666

POLLO I
REDUCTION OF MAGNESIUM SULPHATE BY CARBON MONOXIDE.
12498 APTIC NO. 29943

POMERANTSEV V M
REMOVAL OF CHLORINE FROM GASES.
12177 APTIC NO. 29802

POPELKOVSKAYA M V
ANALYSIS OF MONOETHANOLAMIN IN THE AIR.
12339 APTIC NO. 29970

POPOT A
APPARATUS FOR TEST PREPARATION IN VERY HUMID ATMOSPHERES AND IN PARTICULAR AT DRILLING OPERATIONS.
12253 APTIC NO. 29541
A PHOTOGRAPHIC METHOD OF DETERMINING THE EMISSION OF DUST GENERATED BY INDUSTRIAL MACHINERY.
12254 APTIC NO. 29544

POPOV V A
AN EXPERIMENTAL STUDY OF PHOTOCHEMICAL OXIDATION OF ORGANIC SUBSTANCES IN THE ATMOSPHERE.
*12441 APTIC NO. 29681

POSTMA A K
EFFECT OF SOLUBILITIES OF GASES ON THEIR SCAVENGING BY RAINDROPS.
*12442 APTIC NO. 29780

PRALIAUD H
COMPARISON OF THE CATALYTIC ACTIVITY OF MANGANESE DIOXIDE OF ELECTROLYTIC ORIGIN AND OF MANGANESE HYDROXIDE IN THE OXIDATION OF CARBON OXIDES. IV. ADSORPTION AND DESORPTION OF THE REAGENTS AND THE PRODUCTS OF THE REACTION ON MANGANESE HYDROXIDE.
*12192 APTIC NO. 29506

PUSCHKINA N N
ON THE PROBLEM OF THE COMBINED EFFECTS OF SULFUR DIOXIDE AND BENZPYRENE ON THE ORGANISMS OF TEST ANIMALS.
12583 APTIC NO. 29585

Q

QUELLMALZ E
PROBLEMS OF FLUORINE EMISSION MEASUREMENTS.
*12608 APTIC NO. 29736

R

RACHKOVSKAYA L N
CATALYTIC OXIDATION OF CARBON MONOXIDE IN THE PRESENCE OF RECENTLY SYNTHESIZED PLATINUM COMPLEXES.
12117 APTIC NO. 29896

RADKE L F
INTERACTIONS OF CLOUD CONDENSATION NUCLEI AND ICE NUCLEI WITH CLOUD AND PRECIPITATION ELEMENTS: A REVIEW.
*12443 APTIC NO. 29692

RALLIS D A
DISSOCIATIVE ELECTRON ATTACHMENT PROCESSES IN SO2 AND NO2.
*12444 APTIC NO. 30008

RAMACHANDRAN P A
SIMULTANEOUS ABSORPTION OF TWO GASES ACCOMPANIED BY REVERSIBLE INSTANTANEOUS CHEMICAL REACTIONS.
*12504 APTIC NO. 29917

RANCITELLI L A
STABLE ELEMENTS OF THE ATMOSPHERE AS TRACERS OF PRECIPITATION SCAVENGING.
*12445 APTIC NO. 29705

RANDERSON D
A NUMERICAL EXPERIMENT IN SIMULATING THE TRANSPORT OF SULFUR DIOXIDE THROUGH THE ATMOSPHERE.
*12446 APTIC NO. 29952

RAO M R A
ADSORPTION OF HYDROGEN AND CARBON MONOXIDE AND THEIR MIXTURES ON IRON FISCHER-TROPSCH CATALYSTS. PART I: SYNTHESIS EXPERIMENTS AND ADSORPTION STUDIES WITH HYDROGEN AND CARBON MONOXIDE ON PROMOTED AND UNPROMOTED IRON CATALYSTS.
12216 APTIC NO. 29701

RASCH R
COMPLEX ALKALI IRON SULFATES A CONTRIBUTION TO THE THERMODYNAMICS OF FIRESDIDE HIGH-TEMPERATURE CORROSION.
*12616 APTIC NO. 29783

RASMUSSEN B
CIRCULATION, METABOLISM, AND VENTILATION DURING PROLONGED EXPOSURE TO CARBON MONOXIDE AND TO HIGH ALTITUDE.
12560 APTIC NO. 29869

RATCLIFFE D B
A METER FOR THE SITE DETERMINATION OF HYDROLYSABLE FLUORIDES IN SULPHUR HEXAFLUORIDE.
*12336 APTIC NO. 30007

RAUTU R
ALKALI AND HEAT RECOVERY IN THE FLUE GASES FROM RECOVERY BOILERS.
*12193 APTIC NO. 29852

RAVET R
ABOUT THE PROBLEM OF REPRESENTATIVE SAMPLING IN THE CASE OF WET SANDBLASTING.
*12033 APTIC NO. 29542

RAYNOR G S
THE CURRENT STATUS OF DEPOSITION RESEARCH.
*12447 APTIC NO. 29583

RAZUMOVSKII S D
DEGRADATION OF POLYMERS IN REACTIVE GASES.
*12617 APTIC NO. 29472

RAZUMOVSKY S D
THE REACTION OF OZONE WITH SOLID POLYSTYRENE.
*12505 APTIC NO. 29666

REICHEL G
EFFECTS OF ATMOSPHERIC FACTORS AND OF SO2 AND AIRBORNE DUST EMISSIONS ON INTRABRONCHIAL FLOW RESISTANCE AND INTRATHORACAL GAS VOLUME OF SOUND AND SICK MEN.
12571 APTIC NO. 29048

REIGEL S A
OPERATING EXPERIENCE OF EVAPORATIVE COOLERS SERVING CUPOLAS AIR POLLUTION CONTROL SYSTEMS.
*12034 APTIC NO. 30032

REIQUAM H
A METHOD FOR OPTIMIZING POLLUTANT EMISSIONS IN AN AIRSHED.
*12448 APTIC NO. 29903

RESCH W
TESTS WITH A SAMPLING AND MEASUREMENT METHOD FOR ROUTINE DETERMINATION OF FLUORINE IN THE LOWER ATMOSPHERE.
12262 APTIC NO. 29887

RICHARDS D E
THE ROLE OF TRACE METALS IN CHEMICAL CARCINOGENESIS: ASBESTOS CANCERS.
12543 APTIC NO. 29993

RIHA K
REMOVAL OF BROWN FUME FROM WASTE GASES OF OPEN HEARTH FURNACE OXYGEN STEELMAKING PROCESS.
*12194 APTIC NO. 29945

ROBERSON J E
FACTORS TO CONSIDER IN SELECTING AIR POLLUTION CONTROL EQUIPMENT.
*12195 APTIC NO. 29996

ROBERTS J J
LONG RANGE PLANNING IN AIR RESOURCE MANAGEMENT.
12657 APTIC NO. 30056

ROBERTS M W
THE ADSORPTION OF CARBON MONOXIDE ON CU(001) LEED AND AUGER EMISSION STUDIES.
12496 APTIC NO. 29799

ROBERTS T M
PLANTS AND SOILS AS INDICATORS OF METALS IN THE AIR.
12281 APTIC NO. 30113

ROBERTSON C E
INTERACTIONS OF CLOUD CONDENSATION NUCLEI AND ICE NUCLEI WITH CLOUD AND PRECIPITATION ELEMENTS: A REVIEW.
12443 APTIC NO. 29692

ROBINSON F R
MICROEMISSION SPECTROCHEMICAL ANALYSIS OF HUMAN LUNGS FOR BERYLLIUM.
*12580 APTIC NO. 29475

ROGNER W
PROBLEMS IN INDUSTRIAL POWER PLANTS.
*12618 APTIC NO. 29956

ROLF L
PARTICLE SIZE MEASURING WITH THE TELEVISION MICROSCOPE QUANTIMET FOR SIZES MINUS 4 MICRONS.
12304 APTIC NO. 29512

ROMERO J M
EVOLUTION OF THE ATMOSPHERIC CONTAMINATION IN MADRID IN 1969.
12371 APTIC NO. 30089

ROSE H E
SOME OBSERVATIONS ON THE ABNORMAL AGGLOMERATION OF CARBON BLACK AND OF GRAPHITE POWDER.
*12506 APTIC NO. 29548

ROSEN W G
THE ENVIRONMENTAL CRISIS: THROUGH A GLASS DARKLY.
*12674 APTIC NO. 29619

ROSINSKI J
PARTICLE AND DEUTERIUM CONTENT IN SNOW.
*12449 APTIC NO. 29775

ROUDIER R
INSTRUMENT FOR STUDYING THE ACTION OF EXHAUST GASES DILUTED IN THE AIR, ON BACTERIAL, CELLULAR, AND TISSULAR CULTURES.
12476 APTIC NO. 29849

ROUSSEAU J
COMPARISON OF THE CATALYTIC ACTIVITY OF MANGANESE DIOXIDE OF ELECTROLYTIC ORIGIN AND OF MANGANESE HYDROXIDE IN THE OXIDATION OF CARBON OXIDES. IV. ADSORPTION AND DESORPTION OF THE REAGENTS AND THE PRODUCTS OF THE REACTION ON MANGANESE HYDROXIDE.
12192 APTIC NO. 29506

ROUZAUD J F
THE EFFECTS OF LOW LEVEL FLUORINE POLLUTION IN A MOUNTAIN VALLEY.
12595 APTIC NO. 29991

RUCH W E
STATISTICAL ANALYSES OF AIR POLLUTION SAMPLING FREQUENCY IN AN EPIDEMIOLOGIC STUDY.
12378 APTIC NO. 29655

RUDDER R R
RAYLEIGH SCATTERING OF RUBY-LASER LIGHT BY NEUTRAL GASES.
*12450 APTIC NO. 28884

RYU S
STUDIES ON AIR POLLUTION AND BRONCHIAL ASTHMA. REPORT I.
12548 APTIC NO. 29925

S

SADORI H
INVESTIGATION OF HEAVY OIL DESULFURIZATION IN FIXED-BED CONTACT REACTORS.
*12196 APTIC NO. 29931

SAITO H
EXPERIMENTAL STUDY ON PLASTICS INCINERATION.
12017 APTIC NO. 29841
EXPERIMENTAL STUDIES ON THE HEALTH EFFECTS OF AUTO EXHAUST GAS IN LOW CONCENTRATIONS. (REPORT 1) PRELIMINARY EXPERIMENT.
12589 APTIC NO. 29921

SAITO K
GAS ADSORPTION BY VOLCANIC ASH.
*12197 APTIC NO. 30030

SAKABE A
STUDY ON THE DESULFURIZATION OF FLUE GAS BY THE USE OF DRY LIME.
*12198 APTIC NO. 29972

SAKAI Y
ON A DUST-COLLECTING DEVICE FOR A FERROSILICON FURNACE.
12219 APTIC NO. 30086

SAKAKURA Y
PATHOLOGICAL STUDY ON THE EXPERIMENTAL RABBITS AT AIR-POLLUTED AREA IN YOKKAICHI.
12590 APTIC NO. 29502

SAKAMOTO K
MEASURING METHOD OF OZONE BY CHEMILUMINECENCE.
*12337 APTIC NO. 29665
STUDY ON THE STRENGTH OF SUPER-HIGH ASSEMBLED MULTI-CYLINDER TYPE STACK.
12184 APTIC NO. 30093

SAKATA E
ENVIRONMENTAL POLLUTION AND ITS MEASUREMENTS (II).
*12338 APTIC NO. 29843

SAKATA Y
ADSORPTION OF SULFUR DIOXIDE GAS BY ACTIVATED CARBON OR MOLECULAR SIEVE.
12201 APTIC NO. 29497

SAKUMA H
POLLUTION CONTROL AT THE SAGAMIHARA PLANT OF OUR TOKYO MACHINERY WORKS.
*12199 APTIC NO. 29821

SAKURAI N
STUDIES ON AIR POLLUTION AND BRONCHIAL ASTHMA. REPORT I.
12548 APTIC NO. 29925

SALEH M A
A STUDY OF AIR POLLUTION AROUND A SULPHURIC ACID PLANT.
12374 APTIC NO. 29883

SALTAN P L
DECONTAMINATION OF POLLUTED AIR FROM HARD PITCH PRODUCTION PLANT.
12022 APTIC NO. 30026

SALYAMON G S
ANALYSIS OF MONOETHANOLAMIN IN THE AIR.
*12339 APTIC NO. 29970

SANCHEZ B
EVOLUTION OF THE ATMOSPHERIC CONTAMINATION IN MADRID IN 1969.
12371 APTIC NO. 30089

SANDALLS F J
DETERMINATION OF IRON, CHROMIUM, COBALT, NICKEL, AND SCANDIUM IN ASBESTOS BY NEUTRON ACTIVATION ANALYSIS.
12292 APTIC NO. 30129

SARUTA K
CHANGE IN POLLUTANTS AND FUTURE PROBLEMS.
*12680 APTIC NO. 29743
LEAD CONCENTRATION IN YOKOHAMA AIR.
12399 APTIC NO. 29814

SASAKI N
STUDY ON THE STRENGTH OF SUPER-HIGH ASSEMBLED MULTI-CYLINDER TYPE STACK.
12184 APTIC NO. 30093

SASAKI S
CONTACT HYDRODESULFURIZATION OF PETROLEUM RESIDUAL OIL.
*12200 APTIC NO. 29932

SASAOKA E
ADSORPTION OF SULFUR DIOXIDE GAS BY ACTIVATED CARBON OR MOLECULAR SIEVE.
12201 APTIC NO. 29497

SASAOKA N
ADSORPTION OF SULFUR DIOXIDE GAS BY ACTIVATED CARBON OR MOLECULAR SIEVE.
*12201 APTIC NO. 29497

SATO T
CATALYST FOR HEAVY OIL DESULFURIZATION.
12224 APTIC NO. 29977

SAUNDERS C P R
CONTINUOUS CHARGED CLOUD-PARTICLE SAMPLER.
*12451 APTIC NO. 29712

SAVAGE H R
ESSO/UNION FUEL OIL HYDRODESULFURIZATION PROCESSES. PART I: PROCESS APPLICATIONS AND DEVELOPMENT.
12180 APTIC NO. 29954

SAWAE T
EXPANSION AND STRENGTHENING OF AIR POLLUTION CONTROL COUNTERMEASURES.
*12671 APTIC NO. 29495

SAWATANI T
PROBLEM OF OBNOXIOUS ODOR IN INDUSTRIAL POLLUTIONS.
*12202 APTIC NO. 29745

SAWATARI M
THE INFLUENCE OF AIR POLLUTION UPON THE DISCOLORATION OF THE DYED STUFF AND THE DECREASE OF TENSILE STRENGTH OF SOME FIBERS.
12612 APTIC NO. 29717

SAXENA V K
THERMAL-DIFFUSION CHAMBERS AS CLOUD-NUCLEI COUNTERS.
*12452 APTIC NO. 29714

SAYCHUK V I
FORMATION OF FOG ON THE NUCLEI OF HUMIDITY CONDENSATION.
*12453 APTIC NO. 29636

SCHIANTARELLI E F
EMISSION OF AIR POLLUTANTS FROM AIRCRAFT JET ENGINES.
*12035 APTIC NO. 29734

SCHLIPKOETER H W
THE STUDY OF THE POLLUTED AIR INFLUENCE ON CHILDREN S HEALTH IN RUHRDISTRICT.
12544 APTIC NO. 29899

SCHMIDT P
THE STUDY OF THE POLLUTED AIR INFLUENCE ON CHILDREN S HEALTH IN RUHRDISTRICT.
12544 APTIC NO. 29899

SCHNELL H
THE NEW PLANT FOR PRODUCTION OF SULFUR DIOXIDE AT LEVERKUSEN.
*12203 APTIC NO. 29577

SCHOLZ H U
DEVELOPMENT OF GAS PURIFICATION INSTALLATIONS FOR ELECTRIC MELTING FURNACES.
*12204 APTIC NO. 29740

SCHREIBER M
THE COSTS FOR MAINTENANCE OF CLEAN AIR. THE INFLUENCE OF SOCIAL COSTS ON THE SELECTION OF AN INDUSTRIAL SITE.
*12633 APTIC NO. 29923

SCHUETZ H
THE MEASUREMENT OF ATMOSPHERIC POLLUTION IN GERMANY.
*12340 APTIC NO. 29066

SCHULZ G J
VIBRATIONAL EXCITATION AND COMPOUND STATES IN NO.
12510 APTIC NO. 30037

SCHULZE H D
STUDY OF THE SUSPENDED PARTICULATES AND LEAD CONCENTRATION IN THE AIR WITHIN THE CITY LIMITS OF MAGDEBURG.
12382 APTIC NO. 29515

SCHWARTZ A
CORRECTION: DETERMINATION OF HYDROGEN SULFIDE, SULFUR DIOXIDE, CARBONYL SULFIDE, CARBON DISULFIDE, AND CARBON DIOXIDE IN A GAS MIXTURE.
*12341 APTIC NO. 30120

SCHWARZ K
THE INFLUENCE OF ENVIRONMENTAL PROTECTION ON PLANNING, OPERATION AND ECONOMY OF STEAM POWER PLANTS. I. MAINTENANCE OF CLEAN AIR.
*12036 APTIC NO. 29519

SCOTT B C
IN-CLOUD SCAVENGING ANALYSIS FROM COSMOGENIC RADIONUCLIDE MEASUREMENTS.
12440 APTIC NO. 29694

SCOTT D
AMAZING HOT-GAS ENGINE POWERS CLEAN-AIR BUS.
*12037 APTIC NO. 29876

SCOTT W D
INTERACTIONS OF CLOUD CONDENSATION NUCLEI AND ICE NUCLEI WITH CLOUD AND PRECIPITATION ELEMENTS: A REVIEW.
12443 APTIC NO. 29692

SEBBESSE P
EFFECTS OF LOW CARBON MONOXIDE CONCENTRATIONS IN MAN.
12533 APTIC NO. 29609

SEELY J E
CIGARETTE SMOKING: OBJECTIVE EVIDENCE FOR LUNG DAMAGE IN TEEN-AGERS.
*12342 APTIC NO. 30097

SEESE F E
THE NEW DUPLEX IRON MELTING PLANT AT THE M. BUSCH KG IN WEHRSTAPEL.
12094 APTIC NO. 29861

SEIDL W
DESULFURIZATION OF WASTE GASES AND FUELS.
*12205 APTIC NO. 29957

SEKI M
ADSORPTIVITY OF DESULFURIZING ACTIVATED CARBON FOR SULFUROUS ACID GAS (II) - EFFECT OF THE ADSORPTION - RINSING PROCESS ON THE ADSORPTIVITY.
12238 APTIC NO. 29788
STUDY ON THE EFFECTS OF AIR POLLUTION ON HUMAN BODY--WITH SPECIAL REFERENCE TO OBJECTIVE, COMPARATIVE STUDY OF ALL THE INHABITANTS BY CHEST X-RAY BINDINGS.
12554 APTIC NO. 29904
ADSORPTIVITY OF DESULFURIZING ACTIVATED CARBON FOR SULFUROUS ACID GAS (I). PERFORMANCE VARIATION OF ACTIVATED CARBON IN PILOT PLANT.
*12206 APTIC NO. 29939

SEKI T
ON OUTLINE OF MACHINERY CREDIT INSURANCE AND ITS APPLICATION TO DUST COLLECTION EQUIPMENT.
*12634 APTIC NO. 30087

SEKI Y
PERFORMANCE OF CYCLONE FOR LOW-PRESSURE AIR FLOW.
12182 APTIC NO. 29728

SELEZNEVA YE S
INTERNATIONAL CONFERENCE ON CONDENSATION NUCLEI AND ICE-FORMING NUCLEI.
*12454 APTIC NO. 29699

SELMAN R F
AUTOMATIC SEQUENTIAL RAIN SAMPLER FOR SCAVENGING STUDIES.
12423 APTIC NO. 29741

SEM G J
PIEZOLECTRIC-ELECTROSTATIC AEROSOL MASS CONCENTRATION MONITOR.
12331 APTIC NO. 30061

SEMA T
EXPERIMENTAL RESEARCH ON LOW EXCESS AIR COMBUSTION IN BOILER BURNING HEAVY OIL ONLY.
12142 APTIC NO. 29860

SEMLING H V JR
HOW THE LAWS AND AGENCIES AFFECT YOU.
*12641 APTIC NO. 29113

SEMONIN R G
COLLECTION EFFICIENCIES OF RAINDROPS FOR SUBMICRON PARTICULATES.
12404 APTIC NO. 29709

SEMRAU K T
FEASIBILITY STUDY OF NEW SULFUR OXIDE CONTROL PROCESSES FOR APPLICATION TO SMELTERS AND POWER PLANTS. PART IV: THE WELLMAN-LORD SO2 RECOVERY PROCESS FOR APPLICATION TO POWER PLANT FLUE GASES. (FINAL REPORT).
*12208 APTIC NO. 29641
TWO NEW PROCESSES FOR RECOVERY OF SULPHUR OXIDES FROM SMELTER GASES.
*12207 APTIC NO. 29200

SENIOR R M
THE ROLE OF AIR POLLUTION ON CHRONIC OBSTRUCTIVE PULMONARY DISEASE.
12539 APTIC NO. 30136

SETO K
BASIC RESEARCH ON SMOKE DESULFURIZATION BY LIME-METALS, 1ST REPORT - DESULFURIZATION EFFECT BY ADDITION OF METAL.
12154 APTIC NO. 29478
BASIC RESEARCH ON SMOKE DESULFURIZATION BY LIME-METALS, 2ND REPORT - EFFECT OF METAL ADDITION ON CALCINATION OF LIME.
12153 APTIC NO. 29080

SETO T
DESULFURIZATION OF EXHAUST GAS.
12078 APTIC NO. 29927

SETSER D W
CHEMICAL APPLICATIONS OF METASTABLE ARGON ATMOS.
12519 APTIC NO. 29632

SHAFFER D E
A PROGRAM TO SAMPLE AND ANALYZE AIR POLLUTION IN THE VICINITY OF A CHEMICAL RECLAMATION PLANT.
12039 APTIC NO. 29698

SHAH I S
SULFURIC ACID, SO2 DEVELOPMENTS: REMOVING SO2 AND ACID MIST WITH VENTURI SCRUBBERS.
*12209 APTIC NO. 30080

SHANDOROV G S
CALCULATION OF A JET AXIS IN A DRIFTING FLOW.
*12507 APTIC NO. 30042

SHCHEKOCHIKHIN YU M
INFRARED SPECTROSCOPIC STUDY OF THE CATALYTIC OXIDATION OF CARBON MONOXIDE TO CARBON DIOXIDE ON MANGANESE DIOXIDE.
12105 APTIC NO. 30091

SHELKOVSKAYA N A
DETECTION OF THE TOTAL AMOUNT OF ORGANIC SUBSTANCES IN THE DISCHARGED AIR FROM THE PRODUCTION OF SYNTHETIC FATTY ACIDS.
12334 APTIC NO. 29983

SHIDARA M
COUNTERMEASURES ON PREVENTION OF INDUSTRIAL POLLUTIONS--PART II ON SULFURIC ACID GAS.
*12210 APTIC NO. 29646

SHIGEMATSU I
ITAI-ITAI (OUCH-OUCH) DISEASE AND CADMIUM POLLUTION IN JAPAN.
*12581 APTIC NO. 29673
STUDY ON THE EFFECTS OF AIR POLLUTION ON HUMAN BODY--WITH SPECIAL REFERENCE TO OBJECTIVE, COMPARATIVE STUDY OF ALL THE INHABITANTS BY CHEST X-RAY RINDINGS.
12554 APTIC NO. 29904

SHIGEMORI N
SEASONAL VARIATION OF THE CONCENTRATION OF HEAVY METALS IN SUSPENDED DUST ON THE MAIN STREETS.
12384 APTIC NO. 30025

SHIGETA Y
ODOR TREATMENT AND ITS COST AT RENDERING FACTORIES.
*12211 APTIC NO. 29601

SHIH C C
THE EFFECT OF CATALYST POISONS ON THE ACTIVITY OF CARBON MONOXIDE SHIFT CATALYSTS.
*12212 APTIC NO. 29944

SHIMADA I
EXPERIMENT ON PHOTOCHEMICAL REACTION OF MOTOR EXHAUST GAS.
12469 APTIC NO. 29500

SHIMADA K
REACTOR DEVICE FOR HEAVY OIL DESULFURIZATION.
12149 APTIC NO. 29987

SHIMIZU T
EFFECTS OF SOOT AND SMOKE ON THE HEALTH OF SCHOOL CHILDREN.
12556 APTIC NO. 29791
STUDIES ON PROGNOSIS OF CHRONIC BRONCHITIS.
12587 APTIC NO. 29916
TO PREVENT HEAVY OIL COMBUSTION GAS FROM PRODUCING BLACK SMOKE.
*12213 APTIC NO. 29930

SHIMODAIRA S
THE MECHANISM OF ATMOSPHERIC RUSTING AND THE EFFECT OF CU AND P ON THE RUST FORMATION OF LOW ALLOY STEELS.
12615 APTIC NO. 29631

SHIMOTO K
METHOD TO ARREST AND REMOVE WHITE SMOKE PRODUCED FROM MOLTEN ZINC PLATING PROCESS.
12135 APTIC NO. 29940

SHINRA K
LUMINESCT SPECTROMETER ANALYSIS METHOD OF QUANTITATIVE ANALYSIS OF METALS IN DUST FLOATING IN ATMOSPHERE.
12279 APTIC NO. 29466

SHIRAI M
ON THE EFFECT OF ACCOMPANYING GASES IN QUANTITATIVE ANALYSIS OF HYDROGEN SULFIDE USING METHYLENE BLUE.
*12343 APTIC NO. 29505

SHOJI Y
PREVENTION OF AIR POLLUTION ON IRON FOUNDRY.
12178 APTIC NO. 29602

SHOLTES R S
TENTATIVE METHOD OF ANALYSIS FOR DUSTFALL FROM THE ATMOSPHERE.
*12344 APTIC NO. 30119

SHONO T
LUMINESCT SPECTROMETER ANALYSIS METHOD OF QUANTITATIVE ANALYSIS OF METALS IN DUST FLOATING IN ATMOSPHERE.
12279 APTIC NO. 29466

SHOTWELL H P
THE ANALYSIS OF MERCURY IN URINE, BLOOD, WATER, AND AIR.
12306 APTIC NO. 29652

SIDORENKO G I
CRITERIA OF INJURIOUSNESS AS THE BASIS OF STANDARDS OF THE HYGIENE OF THE AIR.
*12642 APTIC NO. 29574

SIEGEL S
QUENCHING OF NAPHTHALENE LUMINESCENCE BY OXYGEN AND NITRIC OXIDE.
12495 APTIC NO. 29611

SIEPMANN R
DETERMINATION OF ORGANICALLY BOUND CARBON IN MOIST WASTE GASES.
*12345 APTIC NO. 29839

SIGGAARD ANDERSEN J
CAPILLARY FILTRATION RATE ON THE HUMAN CALF DURING EXPOSURE TO CARBON MONOXIDE AND HYPOXIA (3454 M).
12578 APTIC NO. 29804

SIGGAARD ANDERSON J
PLASMA VOLUME AND VASCULAR PERMEABILITY DURING HYPOXIA AND CARBON MONOXIDE EXPOSURE.
*12582 APTIC NO. 29614

SIMONS W H
KINETICS OF RECOVERING SULFUR FROM THE SPENT SEED IN AN MHD POWER PLANT.
12118 APTIC NO. 30048

SKRIPCHENKO V I
USE OF VANADIUM CATALYSTS IN PURIFYING INDUSTRIAL WASTE GASES FROM SULFUR DIOXIDE.
12087 APTIC NO. 29980

SKRIPOV V P
DETERMINATION OF THE DISPERSION OF SCATTERING NEAR THE CRITICAL POINT USING THE SCATTERED LIGHT INDICATRIX.
12499 APTIC NO. 30051

SKUNCA I
STUDY OF THE COMBUSTION OF PARTLY PRE-MIXED LAMINAR NATURAL GAS FLAMES.
12021 APTIC NO. 29948

SKWORZOWA D N
ON THE PROBLEM OF THE COMBINED EFFECTS OF SULFUR DIOXIDE AND BENZPYRENE ON THE ORGANISMS OF TEST ANIMALS.
*12583 APTIC NO. 29585

SLAWSON P R
THE EFFECT OF ATMOSPHERIC CONDITIONS ON PLUME RISE.
*12455 APTIC NO. 29865

SLETMOE G M
THE CALCULATION OF MIXED HYDROCARBON-OXYGENATED SOLVENT EVAPORATION.
*12038 APTIC NO. 29526

SMITH B E
TERATOGENIC EFFECTS OF ANESTHETIC AGENTS: NITROUS OXIDE.
*12584 APTIC NO. 28919

SMITH M H
CONTINUOUS CHARGED CLOUD-PARTICLE SAMPLER.
12451 APTIC NO. 29712

SMITH S
PESTICIDES IN AIR. VOLATILIZATION OF SOIL-APPLIED DDT AND DDD FROM FLOODED AND NONFLOODED PLOTS.
12047 APTIC NO. 29620

SMITH W H
INTERNAL CONVERSION IN BENZENE, BENZENE-D6, AND SULFUR DIOXIDE.
*12508 APTIC NO. 30063

SMOYER J C
A PROGRAM TO SAMPLE AND ANALYZE AIR POLLUTION IN THE VICINITY OF A CHEMICAL RECLAMATION PLANT.
*12039 APTIC NO. 29698

SNELLING D R
MECHANISM OF SINGLET MOLECULAR OXYGEN FORMATION FROM PHOTOLYSIS OF OZONE AT 2537 A.
12424 APTIC NO. 30110

SNYDER D A
A METHOD FOR OBTAINING DILUTE MIXTURES OF GASES.
12284 APTIC NO. 29651

SOLOUKHIN R I
IGNITION KINTICS IN HIGH-TEMPERATURE OXIDATION WITH NITROUS OXIDE IN SHOCK WAVES.
*12509 APTIC NO. 29095

SOMERS A E
ASPHALTENE HYDRODESULFURIZATION WITH SMALL CATALYST PARTICLES DISPOSED IN A GUARD CHAMBER-MAIN REACTOR SYSTEM.
12121 APTIC NO. 29719

SONODA K
EXPERIMENTAL RESEARCH ON LOW EXCESS AIR COMBUSTION IN BOILER BURNING HEAVY OIL ONLY.
12142 APTIC NO. 29860

SOOD S K
SCAVENGING BY SNOW AND ICE CRYSTALS.
*12456 APTIC NO. 29707

SOUDA R
MEASUREMENT OF GAS CONCENTRATION UTILIZING LIGHT SCATTERING BY PARTICULATES.
12352 APTIC NO. 29461

SPENCE D
VIBRATIONAL EXCITATION AND COMPOUND STATES IN NO.
*12510 APTIC NO. 30037

SPORN P
OUR ENVIRONMENT--OPTIONS ON THE WAY INTO THE FUTURE.
*12675 APTIC NO. 29722

SPRINGER K J
EXHAUST EMISSIONS FROM HEAVY DUTY VEHICLES.
12332 APTIC NO. 27631

SPURNY K
POROUS ANALYTICAL FILTERS AND THEIR USE IN AIR HYGIENE.
*12346 APTIC NO. 29784

STACEY M J
OIL REFINERS PREPARE FOR ANIT-POLLUTION CONTROLS.
*12040 APTIC NO. 29127

STANLEY C W
MEASUREMENT OF ATMOSPHERIC LEVELS OF PESTICIDES.
*12392 APTIC NO. 29812

STARKE E W
THE EVOLUTION OF AIR POLLUTION CONTROL LAWS.
*12672 APTIC NO. 30020

STEFFE D H
CONCENTRATION VARIATION OF SOME TRACE METALS IN PRECIPITATION FROM GREAT PLAINS THUNDERSTORMS.
*12457 APTIC NO. 29706

STEIN E
TENTATIVE METHOD OF ANALYSIS FOR DUSTFALL FROM THE ATMOSPHERE.
12344 APTIC NO. 30119

STENHOUSE J I T
PARTICLE CAPTURE MECHANISMS IN FIBROUS FILTERS.
*12214 APTIC NO. 29324

STERN A C
AIR POLLUTION--THE STATUS TODAY.
*12681 APTIC NO. 28923

STEVENS R K
AUTOMATED ANALYSIS SYSTEMS MAKES KRAFT EMISSION MEASUREMENTS EASY.
12325 APTIC NO. 29913
GAS CHROMATOGRAPHY OF REACTIVE SULFUR GASES IN AIR AT THE PARTS- PER-BILLION LEVEL.
*12347 APTIC NO. 30065

STICKEL R
GASIFICATION OF HYDROCARBONS.
12137 APTIC NO. 29779

STOCKHAM J
SULFUR DIOXIDE REMOVAL FROM STACK GASES.
*12215 APTIC NO. 29720

STOCKS P
CANCER MORTALITY IN RELATION TO NATIONAL CONSUMPTION OF CIGARETTES, SOLID FUEL, TEA AND COFFEE.
*12585 APTIC NO. 29608

STOKINGER H E
THE ROLE OF TRACE METALS IN CHEMICAL CARCINOGENESIS: ASBESTOS CANCERS.
12543 APTIC NO. 29993

STRAKHOV B V
EXPLOSIVE OXIDATION OF NITROUS OXIDE MIXED WITH OZONE.
*12511 APTIC NO. 27268

STROM G H
ATMOSPHERIC DISPERSION OF STACK EFFLUENTS.
*12458 APTIC NO. 29773

STYRO B I
INTERNATIONAL CONFERENCE ON CONDENSATION NUCLEI AND ICE-FORMING NUCLEI.
12454 APTIC NO. 29699

SUBRAMANYAM K
ADSORPTION OF HYDROGEN AND CARBON MONOXIDE AND THEIR MIXTURES ON IRON FISCHER-TROPSCH CATALYSTS. PART I: SYNTHESIS EXPERIMENTS AND ADSORPTION STUDIES WITH HYDROGEN AND CARBON MONOXIDE ON PROMOTED AND UNPROMOTED IRON CATALYSTS.
*12216 APTIC NO. 29701

SUDO M
ESSO/UNION FUEL OIL HYDRODESULFURIZATION PROCESSES. PART II: COMMERCIAL EXPERIENCE WITH GO-FINING.
12096 APTIC NO. 29926

SUETAKA W
THE MECHANISM OF ATMOSPHERIC RUSTING AND THE EFFECT OF CU AND P ON THE RUST FORMATION OF LOW ALLOY STEELS.
12615 APTIC NO. 29631

SUGA N
ON THE MEASUREMENT AND ABSOLUTE CALIBRATION OF THE STRENGTH OF SOLAR RADIATION ENERGY.
*12348 APTIC NO. 29863
STANDARD FADING CLOTHES FOR OXIDANTS.
*12619 APTIC NO. 29866

SUGANO S
STANDARDS OF AIR POLLUTION.
*12643 APTIC NO. 29776

SUGIHARA K
PRACTICAL ANALYTICAL METHOD OF EXHAUST REFLUX EFFECT ON NOX EMISSION CONTROL.
12102 APTIC NO. 29499

SUGIMAE A
METAL COMPONENTS OF FLOATING DUST.
12286 APTIC NO. 29464
DETERMINATION OF LEAD CONTENTS IN AUTOMOBILE EXHAUST GAS.
12013 APTIC NO. 29661
MEASUREMENTS OF AIRBORNE DUST.
12288 APTIC NO. 29885

SUGISHIMA W
RECENT TREND AND PROBLEMS OF INDUSTRIAL WASTES TREATING EQUIPMENT.
*12041 APTIC NO. 29827

SULIMA V D
DECONTAMINATION OF POLLUTED AIR FROM HARD PITCH PRODUCTION PLANT.
12022 APTIC NO. 30026

SUZUKA T
ON COMPOSITION AND LEAD CONTENT OF COMMERCIAL GASOLINE.
12048 APTIC NO. 29936
STUDIES ON AIR POLLUTION DUE TO AUTOMOBILE EXHAUST. REPORT 15: AIR POLLUTION AT THE VICINITY OF BOOTHS IN MEISHIN HIGHWAY.
12389 APTIC NO. 30075

SUZUKI A
SOME HEALTH SURVEY RESULTS OF UNDERGROUND GARAGE WORKERS.
12568 APTIC NO. 30074

SUZUKI D
STUDY ON THE EFFECTS OF AIR POLLUTION ON HUMAN BODY--WITH SPECIAL REFERENCE TO OBJECTIVE, COMPARATIVE STUDY OF ALL THE INHABITANTS BY CHEST X-RAY RINDINGS.
12554 APTIC NO. 29904

SUZUKI M
REACTOR DEVICE FOR HEAVY OIL DESULFURIZATION.
12149 APTIC NO. 29987

SUZUKI R
EFFECTS OF SOOT AND SMOKE ON THE HEALTH OF SCHOOL CHILDREN.
12556 APTIC NO. 29791

SUZUKI S
STUDIES ON PHOTOCHEMICAL REACTION BETWEEN SULFURIC ACID GAS AND ORGANIC COMPOUNDS (2).
*12512 APTIC NO. 29463
STUDIES ON PHOTOLYSIS OF NITORGEN OXIDE.
*12513 APTIC NO. 29527
PHOTOCHEMICAL SMOG AND ITS REACTION MECHANISM.
*12459 APTIC NO. 29934
PHOTOCHEMICAL REACTION BETWEEN SO2 AND ORGANIC COMPOUNDS (II).
*12514 APTIC NO. 29967

SUZUKI T
SEMI-AUTOMATIC DETERMINATION OF LEAD IN WIDE BLOOD.
12565 APTIC NO. 29663
STUDY ON THE EFFECTS OF AIR POLLUTION ON HUMAN BODY--WITH SPECIAL REFERENCE TO OBJECTIVE, COMPARATIVE STUDY OF ALL THE INHABITANTS BY CHEST X-RAY RINDINGS.
12554 APTIC NO. 29904

SWENSON C R
POLLUTION REGULATIONS AND THEIR EFFECT ON VEHICLE PREPARATION.
12112 APTIC NO. 29659

SWIFT P
MODERN DUST CONTROL.
*12217 APTIC NO. 29486

SWINNERTON J W
CARBON MONOXIDE IN RAINWATER.
*12460 APTIC NO. 29880

SYMON K
THE INFLUENCE OF AIR POLLUTION ON PUBLIC HEALTH.
*12586 APTIC NO. 29589

T

TABAT N
ELECTROSTATIC FILTER USING DIELECTRIC FILTER MATERIAL.
*12515 APTIC NO. 29596

TABOR E C
TENTATIVE METHOD OF ANALYSIS FOR BERYLLIUM CONTENT OF ATMOSPHERIC PARTICULATE MATTER.
12307 APTIC NO. 29487

TABUSHI K
HYDRODESULFURIZATION OF HEAVY QUALITY OIL, RESIDUAL OIL, ETC.. (Jushitsuyu, zansayu to no suisokadatsuryuho). Text in Japanese. (Ishikawajima-Harima Heavy Industries (Japan)) Japan. Pat. Sho 46-819. 3p., Jan. 9, 1971. (Appl. Dec. 25, 1967, claims not given).
*12218 APTIC NO. 29933
NITROGEN OXIDES ANALYSIS.
*12042 APTIC NO. 29538

TAHARA T
COMBUSTION OF WASTE OIL FROM COAL.
*12043 APTIC NO. 29534

TAIRA K
EFFECTS OF ATMOSPHERIC LEAD ON TRAFFIC POLICEMEN IN A MEDIUM SIZED CITY.
12566 APTIC NO. 29958

TAIRA T
ON A DUST-COLLECTING DEVICE FOR A FERROSILICON FURNACE.
*12219 APTIC NO. 30086

TAKADA K
ON DAMAGE TO PLANTS BY FLUORIDES IN EXHAUST GAS FROM TILE MANUFACTURING FACTORY.
12606 APTIC NO. 29597
PROBLEMS OF PUBLIC NUISANCE CAUSED BY BAD ODORS IN HYOGO PREFECTURE.
12029 APTIC NO. 29599

TAKADA S
DETERMINATION OF POLYNUCLEAR AROMATICS IN SUSPENDED PARTICLES.
*12393 APTIC NO. 29462

TAKAHASHI H
EFFECTS OF SOOT AND SMOKE ON THE HEALTH OF SCHOOL CHILDREN.
12556 APTIC NO. 29791
STUDIES ON PROGNOSIS OF CHRONIC BRONCHITIS.
12587 APTIC NO. 29916

TAKAHASHI S
THE STUDY OF THE REACTION OF HYDROGEN SULPHIDE WITH ATOMIC OXYGEN USING EMISSION SPECTRUM.
*12516 APTIC NO. 29884

TAKAHASHI T
A FEW OBSERVATION ON THE GENERATION MECHANISM OF OBNOXIOUS ODOR.
*12517 APTIC NO. 29649

TAKAI K
STUDY ON THE EFFECTS OF AIR POLLUTION ON HUMAN BODY--WITH SPECIAL REFERENCE TO OBJECTIVE, COMPARATIVE STUDY OF ALL THE INHABITANTS BY CHEST X-RAY RINDINGS.
12554 APTIC NO. 29904

TAKASE I
THE GAS CHROMATOGRAPHIC DETERMINATION OF PESTICIDES. (PART 3) DETERMINATION OF RESIDUES OF ORGANOPHOSPHORUS PESTICIDES.
*12349 APTIC NO. 30134

TAKASE Y
STUDIES ON PHOTOLYSIS OF NITORGEN OXIDE.
12513 APTIC NO. 29527

TAKASHIMA Y
ON ADHESION OF SMOKE MIST PARTICULATES FLOWING THROUGH BETWEEN PLAN PARALLEL PLATES.
*12518 APTIC NO. 29729

TAKAYAMA T
STUDIES ON AIR POLLUTION AND BRONCHIAL ASTHMA. REPORT 1.
12548 APTIC NO. 29925

TAKAYAMA Y
STUDIES ON AIR POLLUTION AND BRONCHIAL ASTHMA. REPORT 1.
12548 APTIC NO. 29925

TAKEDA S
PATHOLOGICAL STUDY ON THE EXPERIMENTAL RABBITS AT AIR-POLLUTED AREA IN YOKKAICHI.
12590 APTIC NO. 29502

TAKEI K
EFFECTS OF WATER INJECTION IN INLET TUBE ON NO CONCENTRATION IN DIESEL EXHAUST.
*12220 APTIC NO. 29911

TAKEMATSU T
REACTOR DEVICE FOR HEAVY OIL DESULFURIZATION.
12149 APTIC NO. 29987

TAKESHI F
ON PLUMBIC POLLUTION OF MUNICIPAL ATMOSPHERE--BEHAVIORS OF PLUMBIC COMPOUND AS AEROSOL.
12431 APTIC NO. 30073

TAKEYAMA T
INITIATION RATE FOR SHOCK-HEATED HYDROGEN-OXYGEN CARBON MONOXIDE- ARGON MIXTURES AS DETERMINED BY OH INDUCTION TIME MEASUREMENTS.
12490 APTIC NO. 29700

TAKIMOTO J
THE INFLUENCE OF AIR POLLUTION UPON THE DISCOLORATION OF THE DYED STUFF AND THE DECREASE OF TENSILE STRENGTH OF SOME FIBERS.
12612 APTIC NO. 29717

TANAKA H
STUDY ON THE STRENGTH OF SUPER-HIGH ASSEMBLED MULTI-CYLINDER TYPE STACK.
12184 APTIC NO. 30093

TANAKA M
SOME HEALTH SURVEY RESULTS OF UNDERGROUND GARAGE WORKERS.
12568 APTIC NO. 30074

TANIGUCHI K
STANDARD FADING CLOTHES FOR OXIDANTS.
12619 APTIC NO. 29866

TANNER T M
STABLE ELEMENTS OF THE ATMOSPHERE AS TRACERS OF PRECIPITATION SCAVENGING.
12445 APTIC NO. 29705

TARMY B L
SCALE-UP OF LABORATORY FLUID-BED DATA: THE SIGNIFICANCE OF SLUG FLOW.
12501 APTIC NO. 29494

TATSUKAWA R
A NEW ENVIRONMENTAL POLLUTANT - POLYCHLORINATED BIPHENYLS (PCB).
*12044 APTIC NO. 29984

TAUBERT H
THE EMISSION AND IMMISSION CONDITIONS OF THE POWER PLANTS IN THE BOEHLENER AREA.
*12045 APTIC NO. 30072

TAYLOR G W
CHEMICAL APPLICATIONS OF METASTABLE ARGON ATMOS.
*12519 APTIC NO. 29632

TEEBKEN D
HISTOPATHOLOGIC FINDINGS IN RATS EXPOSED TO AMBIENT AND FILTERED AIR.
12550 APTIC NO. 29715

PULMONARY CHANGES IN 7000 MICE FOLLOWING PROLONGED EXPOSURE TO AMBIENT AND FILTERED LOS ANGELES AIR.
12551 APTIC NO. 29763

TERABE M
PROGRESS IN MEASUREMENT OF AIR POLLUTION.
*12350 APTIC NO. 29748

TERAO K
EXHAUST GAS CLEANER FOR DIESEL ENGINES.
*12221 APTIC NO. 29533

TERASHIMA S
STUDIES ON AIR POLLUTION AND BRONCHIAL ASTHMA. REPORT 1.
12548 APTIC NO. 29925

TERNOVSKAYA A N
HIGH-CONCENTRATION SULFUR DIOXIDE FROM CALCINING PYRITES IN THE DKSM FURNACE.
12157 APTIC NO. 29982

TESHIROGI N
AN EXPERIMENT ON VALVE RECESSION BY NON-LEADED GASOLINE.
*12222 APTIC NO. 29656

EFFECTS OF ATMOSPHERIC CONDITIONS ON AUTOMOBILE EXHAUST GAS COMPOSITIONS.
*12461 APTIC NO. 29893

THEODORE J
LOW LEVEL CARBON MONOXIDE EXPOSURE AND HUMAN PSYCHOMOTOR PERFORMANCE.
12573 APTIC NO. 29473

THEODORE L
DESIGN OF AN ELECTROSTATIC PRECIPITATOR USING MODELLING AND SIMULATION TECHNIQUES.
*12223 APTIC NO. 29639

THOMAS A A
MICROEMISSION SPECTROCHEMICAL ANALYSIS OF HUMAN LUNGS FOR BERYLLIUM.
12580 APTIC NO. 29475

THOMAS C W
IN-CLOUD SCAVENGING ANALYSIS FROM COSMOGENIC RADIONUCLIDE MEASUREMENTS.
12440 APTIC NO. 29694

STABLE ELEMENTS OF THE ATMOSPHERE AS TRACERS OF PRECIPITATION SCAVENGING.
12445 APTIC NO. 29705

THOMAS H E
CORROSION RATES OF MILD STEEL IN COASTAL, INDUSTRIAL, AND INLAND AREAS OF NORTHERN CALIFORNIA.
*12620 APTIC NO. 28810

TIEN C L
INFRARED RADIATION PROPERTIES OF SULFUR DIOXIDE.
12269 APTIC NO. 29521

TING I P
AIR POLLUTION OXIDANTS - THEIR EFFECTS ON METABOLIC PROCESSES IN PLANTS.
12598 APTIC NO. 29524

TITOVA G A
OXIDATION OF SODIUM SULFIDE AND MERCAPTIDE IN BLACK LIQUOR.
12071 APTIC NO. 29278

TOBA T
STUDIES ON AIR POLLUTION AND BRONCHIAL ASTHMA. REPORT 1.
12548 APTIC NO. 29925

TOCHIGI R
STUDIES ON AIR POLLUTION AND BRONCHIAL ASTHMA. REPORT 1.
12548 APTIC NO. 29925

TODD P
CARBON MONOXIDE AS A COMBUSTION CONTROL PARAMETER.
12072 APTIC NO. 29471

TODO H
CATALYST FOR HEAVY OIL DESULFURIZATION.
*12224 APTIC NO. 29977

TODO N
STUDY ON THE DIRECT DESULFURIZATION OF HEAVY OIL.
12159 APTIC NO. 29989

TOKUCHI K

STUDY ON THE EFFECTS OF AIR POLLUTION ON HUMAN BODY--WITH SPECIAL REFERENCE TO OBJECTIVE, COMPARATIVE STUDY OF ALL THE INHABITANTS BY CHEST X-RAY RINDINGS.
12554 APTIC NO. 29904

TOMIMASU A

DETERMINATION OF AROMATIC HYDROCARBONS EMITTED FROM THE DRY BATTERY PLANT.
12287 APTIC NO. 29862

TOMIZUKA K

EMISSIONS FROM INTERNAL COMBUSTION ENGINE.
*12225 APTIC NO. 29531

TOMOKUNI K

ON AIR POLLUTION IN MIZUSHIMA AREA.
12390 APTIC NO. 29895

TOURNUT J

THE EFFECTS OF LOW LEVEL FLUORINE POLLUTION IN A MOUNTAIN VALLEY.
12595 APTIC NO. 29991

TRAFICANTE D

ESSO/UNION FUEL OIL HYDRODESULFURIZATION PROCESSES. PART I: PROCESS APPLICATIONS AND DEVELOPMENT.
12180 APTIC NO. 29954

TRUNIGER B

RENAL FUNCTION DURING PROLONGED EXPOSURE TO HYPOXIA AND CARBON MONOXIDE. I. GLOMERULAR FILTRATION AND PLASMA FLOW.
12576 APTIC NO. 29615

RENAL FUNCTION DURING PROLONGED EXPOSURE TO HYPOXIA AND CARBON MONOXIDE. II. ELECTROLYTE HANDLING.
12577 APTIC NO. 29805

TSAROS C L

SULFUR RECOVERY IN THE MANUFACTURE OF PIPELINE GAS FROM COAL.
*12635 APTIC NO. 29143

TSUCHIYA H

ON ADHESION OF SMOKE MIST PARTICULATES FLOWING THROUGH BETWEEN PLAN PARALLEL PLATES.
12518 APTIC NO. 29729

TSUCHIYA K

AIR POLLUTION BY TRACE METALS IN JAPAN.
12561 APTIC NO. 29816

DISTRIBUTION OF LEAD IN THE AIR NEAR CITY ROADS.
12388 APTIC NO. 29918

TSUDA H

THE GAS CHROMATOGRAPHIC DETERMINATION OF PESTICIDES. (PART 3) DETERMINATION OF RESIDUES OF ORGANOPHOSPHORUS PESTICIDES.
12349 APTIC NO. 30134

TSUDA M

CONTROL OF EXHAUST GAS EMISSION OF MITSUBISHI COLT GALANT.
12228 APTIC NO. 29901

TSUJI

ON THE REACTIVITY OF AMINES WITH OZONE.
12190 APTIC NO. 29978

TSUJI M

PROBLEMS OF PUBLIC NUISANCE CAUSED BY BAD ODORS IN HYOGO PREFECTURE.
12029 APTIC NO. 29599

SOME PROBLEMS ON THE OFFENSIVE ODOR IN HYOGO PREFECTURE.
12030 APTIC NO. 29842

TSUNETOSHI Y

EFFECTS OF SOOT AND SMOKE ON THE HEALTH OF SCHOOL CHILDREN.
12556 APTIC NO. 29791

STUDIES ON PROGNOSIS OF CHRONIC BRONCHITIS.
12587 APTIC NO. 29916

TSURUTA K

STUDY ON THE EFFECTS OF AIR POLLUTION ON HUMAN BODY--WITH SPECIAL REFERENCE TO OBJECTIVE, COMPARATIVE STUDY OF ALL THE INHABITANTS BY CHEST X-RAY RINDINGS.
12554 APTIC NO. 29904

TURPIN P Y

PHOTON DETECTION OF LIGHT DIFFUSION WITH ULTRAFINE AEROSOLS.
*12351 APTIC NO. 30038

U

UCHIKI H

GAS CHROMATOGRAPHIC ANALYSIS OF TRACES OF CO AND CO2.
12326 APTIC NO. 29938

UCHIYAMA Y

AN EXPERIMENT ON VALVE RECESSION BY NON-LEADED GASOLINE.
12222 APTIC NO. 29656

EFFECTS OF ATMOSPHERIC CONDITIONS ON AUTOMOBILE EXHAUST GAS COMPOSITIONS.
12461 APTIC NO. 29893

UDO H

MEASUREMENT OF GAS CONCENTRATION UTILIZING LIGHT SCATTERING BY PARTICULATES.
*12352 APTIC NO. 29461

UEDA M

EFFECTS OF SOOT AND SMOKE ON THE HEALTH OF SCHOOL CHILDREN.
12556 APTIC NO. 29791

STUDIES ON PROGNOSIS OF CHRONIC BRONCHITIS.
*12587 APTIC NO. 29916

UKEGUCHI N

ESTIMATION OF GROUND LEVEL CONCENTRATION BY SMOKE-DIFFUSION WIND TUNNELS.
*12462 APTIC NO. 29820

TURBULENT DIFFUSION THEORY TAKING TURBULENT BOUNDARY LAYER INTO CONSIDERATION.
*12463 APTIC NO. 29822

ON THE DIFFUSION OF AUTO-EXHAUSTED GASES.
*12464 APTIC NO. 29850

ULMER W T

EFFECTS OF ATMOSPHERIC FACTORS AND OF SO2 AND AIRBORNE DUST EMISSIONS ON INTRABRONCHIAL FLOW RESISTANCE AND INTRATHORACAL GAS VOLUME OF SOUND AND SICK MEN.
12571 APTIC NO. 29048

UNDERWOOD A F

REQUIEM FOR THE PISTON ENGINE? Machine Design, 42(19):20-22, 24-26, 31, 33-34, Aug. 6, 1970. 4 refs.
12226 APTIC NO. 29468

OZONE AND AIR IONS ACCOMPANYING BIOLOGICAL APPLICATIONS OF ELECTRIC FIELDS.
12594 APTIC NO. 29897

URANO K

METHOD TO REMOVE HARMFUL SUBSTANCES FROM STACK GAS BY-PRODUCING AMMONIUM SULFATE AND OTHERS (XV) - ACTIVATION ENERGY OF ACTIVATED CARBON FOR SO2 ADSORPTION.
12161 APTIC NO. 29648

URLAUB A

THE EXHAUST GAS COMPOSITION AT THE FM GASOLINE ENGINE.
*12046 APTIC NO. 29516

USHAKOV S G

EXPERIMENTAL INVESTIGATION OF THE PROCESS OF CENTRIFUGAL DUST SEPARATION.
12245 APTIC NO. 30133

USHIJIMA H

ON THE BASIC LAW FOR ENVIRONMENTAL POLLUTION CONTROL, NOISE CONTROL LAW, WATER POLLUTION PREVENTION LAW, AND AIR POLLUTION PREVENTION LAW.
12670 APTIC NO. 29509

USSAR M

TECHNOLOGY RENDERS ITS SERVICES TO AIR PURIFICATION AND NOISE SUPPRESSION AS PART OF ENVIRONMENTAL HYGIENE.
*12227 APTIC NO. 29725

UTSUMI H

CONTROL OF EXHAUST GAS EMISSION OF MITSUBISHI COLT GALANT.
*12228 APTIC NO. 29901

V

VALAND T

CORROSION OF NACL-CONTAMINATED FE IN HUMID ATMOSPHERE OF LOW O2 CONTENT.
*12621 APTIC NO. 30112

VAN DRIESEN R P
H-OIL AS A TOOL FOR LOW SULFUR FUEL PRODUCTION.
12126 APTIC NO. 29808

VAN GEMERT L J
FLAME PHOTOMETRIC DETECTION OF VOLATILE SULPHUR COMPOUNDS IN SMOKE FROM VARIOUS TYPES OF CIGARETTES.
12283 APTIC NO. 29874

VARKONYI T
REGISTRATION OF THE SULPHUR DIOXIDE CONTENT OF THE AIR IN BUDAPEST.
*12394 APTIC NO. 29868

VAUGHAN E U
APPROXIMATE SOLUTION OF THE EQUATIONS FOR AEROSOL AGGLOMERATION.
12483 APTIC NO. 30111

VERMA M P
RAPID ASSESSMENT OF TESTS OF POLLUTANT EFFECTS IN MAN.
12536 APTIC NO. 29431

VESELY R
OXIDATION STUDY ON ATMOSPHERIC AGING OF POLYMERS.
*12622 APTIC NO. 29826

VIGLA D
FORMATION OF PARTICLES BY PHOTOLYSIS AND RADIOLYSIS.
12407 APTIC NO. 29809

VILAND C K
UNLEADED GASOLINE AND SMOG-FREE AUTOS--HOW AND WHY.
*12644 APTIC NO. 30035

VOELLMIN J A
GC-MS ANALYSIS OF THE SEMI-VOLATILES OF CIGARETTE SMOKE.
12282 APTIC NO. 29660

VOLGIN B P
RESISTANCE OF PHASES INVOLVED IN MASS TRANSFER DURING ABSORPTION OF A READILY SOLUBLE GAS IN A VENTURI SCRUBBER.
12188 APTIC NO. 29968

VOROS FELKAI G
INCIDENCE OF RHODOTORULA SPECIES IN URBAN AIR.
*12395 APTIC NO. 29637

VUORELAINEN O
AIR POLLUTION DERIVING FROM HEATING PLANTS AND INDUSTRIAL PROCESSES AND ITS CONTROL.
*12229 APTIC NO. 30106

W

WADA A
THE TENDENCY OF AIR POLLUTION AT NAGOYA CITY OBSERVED FROM THE WEIGHT OF FALLING DUST.
*12396 APTIC NO. 30076

WADA O
FOUR-ALKYL LEAD AND ENVIRONMENTAL POLLUTION.
*12588 APTIC NO. 29825

WAGGONER P E
PLANTS AND POLLUTED AIR.
*12230 APTIC NO. 30083

WAGMAN J
TENTATIVE METHOD OF ANALYSIS FOR DUSTFALL FROM THE ATMOSPHERE.
12344 APTIC NO. 30119

WAHNSCHAFFE E
A STUDY OF THE CONVERSION OF SO2 TO SO3.
*12623 APTIC NO. 30022

WAID D E
FUME INCINERATION: EFFECTIVE, EFFICIENT.
12100 APTIC NO. 30077

WAKABAYASHI K
CATALYST FOR HEAVY OIL DESULFURIZATION.
12224 APTIC NO. 29977

WALKENHORST W
COAGULATION OF DUST PARTICLES, IN PARTICULAR BY AEROSOLS OF SEA WATER SALT.
ERROR
A NEW FILTER FOR SUSPENDED MATTER WITH HIGH COLLECTION EFFICIENCY AND LOW FLOW RESISTANCE.
*12231 APTIC NO. 29578

WALKER A B
PRINCIPLES OF COLLECTING PARTICULATES: DRY, WET OR ELECTROSTATICALLY.
*12232 APTIC NO. 29838

WALKER B F
INITIATION RATE FOR SHOCK-HEATED HYDROGEN-OXYGEN CARBON MONOXIDE- ARGON MIXTURES AS DETERMINED BY OH INDUCTION TIME MEASUREMENTS.
12490 APTIC NO. 29700

WALL L
ATMOSPHERIC POLLUTION IN HEADINGS FOLLOWING SHOTFIRING.
12024 APTIC NO. 29678

WALLING J C
POLLUTION CONTROL SYSTEMS FOR ASPHALT PLANTS.
*12233 APTIC NO. 29492

WANG H E
EXPERIMENTS WITH A REGIONAL FINE-MESH PREDICTION MODEL.
*12465 APTIC NO. 30107

WANG S C
THERMAL AND DIFFUSIONAL EFFECTS IN NONCATALYTIC SOLID GAS REACTIONS.
12522 APTIC NO. 29612

WANNER H U
STUDIES IN INDOOR SWIMMING POOLS WITH OZONIZATION PLANTS.
*12353 APTIC NO. 29999

WASILEWSKA J
DISSIPATION AND PRECIPITATION OF DUST EMITTED BY A STEELWORKS.
*12466 APTIC NO. 29829
DISSIPATION OF SO2 GENERATED IN A STEELWORK INTO THE GROUND LAYER OF THE ATMOSPHERE.
*12467 APTIC NO. 29867

WATANABE I
QUALITATIVE ANALYSIS OF EXHAUST GAS FROM FISH MEAL PLANT.
12028 APTIC NO. 29662

WATANABE M
ANALYSIS OF HC OF LOW GRADE IN ATMOSPHERE.
12391 APTIC NO. 29482

WATANABE N
AN EXPERIMENT ON VALVE RECESSION BY NON-LEADED GASOLINE.
12222 APTIC NO. 29656

WATANABE T
METHOD TO MANUFACTURE CATALYST FOR DESULFURIZATION BY HYDROGEN ADDITION OF LIQUID HYDROCARBON.
*12234 APTIC NO. 29974

WATARI S
ACTIVATED CARBON INDUSTRY AND PROBLEMS IN FUTURE - SPHERICAL ACTIVATED CARBON FROM COAL.
*12235 APTIC NO. 29942

WAYNE L G
ATMOSPHERIC REACTIONS AND SCAVENGING PROCESSES.
12426 APTIC NO. 29774

WEBB B K
ELECTROSTATIC FIELD BREAKDOWN PHENOMENA IN APPLYING CHARGED PARTICLES.
*12236 APTIC NO. 30006

WEBER K
APPLICATION OF FLUORIMETRY IN SMOKE MEASUREMENT.
12280 APTIC NO. 29704

WEICHMAN R L
METHANESULFENYL CHLORIDE. V. THE SPONTANEOUS DECOMPOSITION OF METHANESULFENYL CHLORIDE AND METHYLSULFUR TRICHLORIDE.
12485 APTIC NO. 29674

WEINSTEIN L H
METABOLIC EFFECTS OF ATMOSPHERIC FLUORIDES ON PLANTS.
12605 APTIC NO. 29616

WEISS M J
INELASTIC ELECTRON SCATTERING FROM NITROUS OXIDE BETWEEN 5.0 AND 20.0 EV ENERGY LOSS.
*12521 APTIC NO. 27460

WEISSGERBER R
ALUMINUM MATERIAL FOR THE CHEMICAL INDUSTRY.
12624 APTIC NO. 29922

WEISSMAN W
ESSO/UNION FUEL OIL HYDRODESULFURIZATION PROCESSES. PART I: PROCESS APPLICATIONS AND DEVELOPMENT.
12180 APTIC NO. 29954

WELLER J
ALUMINUM MATERIAL FOR THE CHEMICAL INDUSTRY.
*12624 APTIC NO. 29922

WEN C Y
THERMAL AND DIFFUSIONAL EFFECTS IN NONCATALYTIC SOLID GAS REACTIONS.
*12522 APTIC NO. 29612

WENIGE L
THE EMISSION AND IMMISSION CONDITIONS OF THE POWER PLANTS IN THE BOEHLENER AREA.
12045 APTIC NO. 30072

WHITE E W
A COMPUTERIZED METHOD FOR SIZE CHARACTERIZATION OF ATMOSPHERIC AEROSOLS BY THE SCANNING ELECTRON MICROSCOPE.
12266 APTIC NO. 30019

WILKNISS P E
CHEMICAL PROCESSES AT THE AIR-SEA INTERFACE: THE BEHAVIOR OF FLUORINE.
*12468 APTIC NO. 30126

WILLIS G H
PESTICIDES IN AIR. VOLATILIZATION OF SOIL-APPLIED DDT AND DDD FROM FLOODED AND NONFLOODED PLOTS.
*12047 APTIC NO. 29620

WINEFORDNER J D
CALCULATION OF EXCESS AIR FOR COMBUSTION PROCESSES USING O2-TO-N2 RATIO.
12176 APTIC NO. 29796

WISDOM J
EMISSION CONTROL BY EXHAUST MANIFOLD REACTOR--AN INITIAL STUDY FOR SMALL ENGINES.
12163 APTIC NO. 29629

WISE K R
A NATIONAL ESTIMATE OF PUBLIC AND INDUSTRIAL HEAT REJECTION REQUIREMENTS BY DECADES THROUGH THE YEAR 2000 AD.
12018 APTIC NO. 29272

WOOD P M
RATES OF ENERGY TRANSFER FROM N2 A CUBED SIGMA(+) U TO VARIOUS MOLECULES. INITIAL AND FINAL QUANTUM STATES IN THE TRANSFER TO NOX SQUARED PI AND HG(6 1S SUB O), AND VIBRATIONAL RELAXATION OF N2 A CUBED SIGMA(+) U (V EQUALS 1) IN HELIUM.
12481 APTIC NO. 29750

WOOLRICH P F
TENTATIVE METHOD OF ANALYSIS FOR DUSTFALL FROM THE ATMOSPHERE.
12344 APTIC NO. 30119

WRIGHT B M
THE IMPORTANCE OF AGGREGATION PHENOMENA IN THE QUANTITATIVE ESTIMATE OF DUST IN THE AIR.
*12354 APTIC NO. 29549

WYSCHINSKA H
BENZPYRENE AND OTHER AROMATIC HYDROCARBONS IN THE DUST OF POLISH TOWNS.
12385 APTIC NO. 29569

WYSOTSCHINA I W
ON THE PROBLEM OF THE COMBINED EFFECTS OF SULFUR DIOXIDE AND BENZPYRENE ON THE ORGANISMS OF TEST ANIMALS.
12583 APTIC NO. 29585

Y

YAHASHI T
STUDIES ON AIR POLLUTION AND BRONCHIAL ASTHMA. REPORT 1.
12548 APTIC NO. 29925

YAMADA H
THE INFLUENCE OF AIR POLLUTION UPON THE DISCOLORATION OF THE DYED STUFF AND THE DECREASE OF TENSILE STRENGTH OF SOME FIBERS.
12612 APTIC NO. 29717

YAMADA Y
POLLUTION CONTROL AT THE SAGAMIHARA PLANT OF OUR TOKYO MACHINERY WORKS.
12199 APTIC NO. 29821

YAMADAYA M
MANUFACTURING OF INDUSTRIAL CATALYST COMPRISING ALUMINA AS CARRIER. (Arumina o tantai to shita kogyo shokubai no seizo). Text in Japanese. Preprint, Japan Industrial Technology Assoc., Tokyo, 12p., 1970. 5 refs. (Presented at the Industrial Catalyst Seminar Tokyo, Japan, Nov. 9, 1970.)
12158 APTIC NO. 29755

LEAD CONCENTRATION IN YOKOHAMA AIR.
12399 APTIC NO. 29814

EXPERIMENTAL STUDIES ON THE HEALTH EFFECTS OF AUTO EXHAUST GAS IN LOW CONCENTRATIONS. (REPORT 1) PRELIMINARY EXPERIMENT.
*12589 APTIC NO. 29921

YAMAGATA Y
EFFECTS OF SOOT AND SMOKE ON THE HEALTH OF SCHOOL CHILDREN.
12556 APTIC NO. 29791

YAMAGISHI T
GAS ADSORPTION BY VOLCANIC ASH.
12197 APTIC NO. 30030

YAMAGIWA H
PATHOLOGICAL STUDY ON THE EXPERIMENTAL RABBITS AT AIR-POLLUTED AREA IN YOKKAICHI.
*12590 APTIC NO. 29502

YAMAIE T
DEVICE TO HOLD IN PLACE ATOMIZER NOZZLES OF A WASHER DEVICE FOR SULFUR OXIDE GAS CONTAINED IN COMBUSTION EXHAUST GAS FROM BOILER.
12138 APTIC NO. 29685

YAMAKI N
EXPERIMENT ON PHOTOCHEMICAL REACTION OF MOTOR EXHAUST GAS.
12469 APTIC NO. 29500

YAMAMOTO
CO BOILER OF FLUIDIZED BED TYPE CATALYTIC CRACKING PROCESS PRODUCIN NO LEAD GASOLINE.
*12237 APTIC NO. 29535

YAMAMOTO K
ADSORPTIVITY OF DESULFURIZING ACTIVATED CARBON FOR SULFUROUS ACID GAS (II) - EFFECT OF THE ADSORPTION - RINSING PROCESS ON THE ADSORPTIVITY.
*12238 APTIC NO. 29788

ADSORPTIVITY OF DESULFURIZING ACTIVATED CARBON FOR SULFUROUS ACID GAS (1). PERFORMANCE VARIATION OF ACTIVATED CARBON IN PILOT PLANT.
12206 APTIC NO. 29939

YAMAMOTO T
DETERMINATION OF POLYNUCLEAR AROMATICS IN SUSPENDED PARTICLES.
12393 APTIC NO. 29462

ON COMPOSITION AND LEAD CONTENT OF COMMERCIAL GASOLINE.
*12048 APTIC NO. 29936

TREATMENT OF MUNICIPAL TRASH BY SANITATION TRUCK.
*12049 APTIC NO. 29979

YAMANAKA T
UTILIZATION OF CATALYST IN AIR POLLUTION CONTROL (4).
*12239 APTIC NO. 29477

UTILIZATION OF CATALYST IN AIR POLLUTION CONTROL (5).
*12240 APTIC NO. 29898

YAMASHITA M
STUDY ON THE STRENGTH OF SUPER-HIGH ASSEMBLED MULTI-CYLINDER TYPE STACK.
12184 APTIC NO. 30093

YAMATE N
AIR POLLUTION BY EXHAUST GAS II. DETERMINATION OF LEAD AND CARBON MONOXIDE INSIDE A GARAGE AND A REPAIR FACTORY IN TOKYO CITY.
*12397 APTIC NO. 29576

YANAGAWA H
STUDY ON THE EFFECTS OF AIR POLLUTION ON HUMAN BODY--WITH SPECIAL REFERENCE TO OBJECTIVE, COMPARATIVE STUDY OF ALL THE INHABITANTS BY CHEST X-RAY RINDINGS.
12554 APTIC NO. 29904

YANAGIHARA S
EXPERIMENT ON PHOTOCHEMICAL REACTION OF MOTOR EXHAUST GAS.
*12469 APTIC NO. 29500

STUDY ON AUTO EXHAUST.
*12241 APTIC NO. 29909

COUNTERMEASURES ON AUTOMOBILE EXHAUST GAS.
*12050 APTIC NO. 29935

YANAGISAWA S

EXAMINATION OF QUANTITATIVE ANALYSIS METHOD OF FLUORINE IN VEGETABLE SAMPLES.
12302 APTIC NO. 29467

JIS ANALYTICAL PROCESS FOR NITROGEN OXIDES IN WASTE GAS.
*12355 APTIC NO. 29677

YATABE T

INVESTIGATION ON THE MEASURING ERRORS OF CONDUCTOMETRIC SULFUR DIOXIDE ANALYZER USED FOR AIR POLLUTION MONITOR.
*12356 APTIC NO. 29398

YOBS A R

MEASUREMENT OF ATMOSPHERIC LEVELS OF PESTICIDES.
12392 APTIC NO. 29812

YOCOM J E

INDOOR/OUTDOOR AIR QUALITY RELATIONSHIPS.
*12398 APTIC NO. 30090

YONEYAMA E

LEAD CONCENTRATION IN YOKOHAMA AIR.
*12399 APTIC NO. 29814

EXPERIMENTAL STUDIES ON THE HEALTH EFFECTS OF AUTO EXHAUST GAS IN LOW CONCENTRATIONS. (REPORT I) PRELIMINARY EXPERIMENT.
12589 APTIC NO. 29921

MEASUREMENT OF ATMOSPHERIC DUST BY LIGHT SCATTERING METHOD AND HIGH VOLUME SAMPLER METHOD.
*12357 APTIC NO. 29864

YORK J L

A METHOD FOR OBTAINING DILUTE MIXTURES OF GASES.
12284 APTIC NO. 29651

YOSHIDA K

EFFECTS OF SOOT AND SMOKE ON THE HEALTH OF SCHOOL CHILDREN.
12556 APTIC NO. 29791

YOSHIDA M

STUDIES IN THE PSYCHOLOGY OF OLFACTION. (4). QUALITATIVE CLASSIFICATION OF ODORS.
*12358 APTIC NO. 29929

YOSHIDA R

EFFECTS OF SOOT AND SMOKE ON THE HEALTH OF SCHOOL CHILDREN.
12556 APTIC NO. 29791

YOSHIDA Y

PERFORMANCE OF CYCLONE FOR LOW-PRESSURE AIR FLOW.
12182 APTIC NO. 29728

YOSHIMOCHI S

OUTLOOK OF ENVIRONMENTAL POLLUTION AND ITS PREVENTION TECHNOLOGY.
12124 APTIC NO. 29600

YOSHIMURA M

EQUALIZATION OF PARTICLE TRANSFER IN TRANSFERABLE STRATUM.
12144 APTIC NO. 29928

YOSHIOKA H

DESULFURIZATION.
*12242 APTIC NO. 29742

YOSHIOKA N

FILTRATION OF MULTI-DISPERSING AEROSOL UNDER THE FORCE OF GRAVITY.
12115 APTIC NO. 29730

ADHESION TO PIPE S WALL WITH AEROSOL PARTICLES FLOWING IN A PIPE AS TURBULENT FLOW.
*12523 APTIC NO. 30071

YOSHIZAWA S

REPORT ON THE INVESTIGATION INTO THE MAINTENANCE AND THE SUPERVISION OF AIR-CLEANING APPARATUS AS AN INDICATION OF AIR POLLUTION.
12122 APTIC NO. 29840

YOSOMA T

EXPERIMENTAL STUDY ON PLASTICS INCINERATION.
12017 APTIC NO. 29841

YOUNG B J

ESSO/UNION FUEL OIL HYDRODESULFURIZATION PROCESSES. PART II: COMMERCIAL EXPERIENCE WITH GO-FINING.
12096 APTIC NO. 29926

YOUNG J A

IN-CLOUD SCAVENGING ANALYSIS FROM COSMOGENIC RADIONUCLIDE MEASUREMENTS.
12440 APTIC NO. 29694

Z

ZAIKOV G E

DEGRADATION OF POLYMERS IN REACTIVE GASES.
12617 APTIC NO. 29472

ZAIKOV G H

THE REACTION OF OZONE WITH SOLID POLYSTYRENE.
12505 APTIC NO. 29666

ZAMFIRESCU M

AIR POLLUTION BY NITRIC OXIDE FROM FERTILIZER FACTORIES.
12051 APTIC NO. 29568

THE 3,4-BENZPYRENE CONTENT OF THE AIR IN TWO INDUSTRIAL AREAS.
*12400 APTIC NO. 29586

ZDONIK S B

AN SO2 REMOVAL AND RECOVERY PROCESS.
12630 APTIC NO. 29144

ZEBEL G

A NEW FILTER FOR SUSPENDED MATTER WITH HIGH COLLECTION EFFICIENCY AND LOW FLOW RESISTANCE.
12231 APTIC NO. 29578

ZEITZ A H

FUTURE OF GASOLINE WITH, LEAD ANTIKNOCKS.
*12243 APTIC NO. 29625

ZESCHMANN E G

EXHAUST GAS EVALUATION BY AIR RATIO COEFFICIENTS.
12278 APTIC NO. 29638

ZIELINSKI M

AIR POLLUTION BY NITRIC OXIDE FROM FERTILIZER FACTORIES.
*12051 APTIC NO. 29568

EXPERIMENTAL STUDIES ON THE EFFECT OF SMALL DOSES OF LEAD AND SULFUR DIOXIDE.
12532 APTIC NO. 29588

ZIMMERMAN M D

POLLUTION TECHNOLOGY--WHAT THEY RE DOING OVERSEAS.
*12244 APTIC NO. 29650

ZIMMERMANN V

CATECHOLAMINE-INDEPENDENT GLYCOGENOLYSIS IN BRAIN DURING CARBON MONOXIDE POISONING.
12545 APTIC NO. 29835

ZUEVA T V

HETEROGENEOUS CATALYSIS INVOLVING ASTOICHIOMETRIC COMPONENTS. IV. INITIATION EFFECTS OF CARBON MONOXIDE AND OXYGEN OXIDE IN THE HYDROPOLYMERIZATION OF PROPENE AND ISOBUTENE.
12488 APTIC NO. 29871

ZUSKIN E

CIGARETTE SMOKING: OBJECTIVE EVIDENCE FOR LUNG DAMAGE IN TEEN-AGERS.
12342 APTIC NO. 30097

ZVEREV N I

EXPERIMENTAL INVESTIGATION OF THE PROCESS OF CENTRIFUGAL DUST SEPARATION.
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29095	29113	29115	29127	29143	29144	29200	29221	29222	29257	29267	29270	29272	29273
29278	29289	29291	29324	29381	29398	29431	29439	29449	29459	29460	29461	29462	29463
29464	29465	29466	29467	29468	29469	29470	29471	29472	29473	29474	29475	29476	29477
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29508	29509	29510	29511	29512	29513	29514	29515	29516	29517	29518	29519	29520	29521
29522	29523	29524	29526	29527	29528	29529	29530	29531	29532	29533	29534	29535	29536
29537	29538	29539	29540	29541	29542	29543	29544	29545	29546	29547	29548	29549	29550
29551	29552	29553	29554	29555	29556	29557	29558	29559	29560	29561	29562	29564	29565
29566	29567	29568	29569	29571	29572	29573	29574	29575	29576	29577	29578	29579	29581
29582	29583	29584	29585	29586	29587	29588	29589	29590	29591	29592	29593	29594	29595
29596	29597	29598	29599	29600	29601	29602	29603	29604	29605	29607	29608	29609	29610
29611	29612	29613	29614	29615	29616	29617	29618	29619	29620	29621	29622	29623	29624
29625	29626	29627	29628	29629	29630	29631	29632	29633	29634	29635	29636	29637	29638
29639	29640	29641	29642	29643	29644	29645	29646	29647	29648	29649	29650	29651	29652
29653	29654	29655	29656	29657	29658	29659	29660	29661	29662	29663	29664	29665	29666
29667	29668	29669	29670	29671	29672	29673	29674	29675	29676	29677	29678	29679	29680
29681	29683	29685	29686	29687	29688	29689	29691	29692	29694	29695	29696	29697	29698
29699	29700	29701	29702	29704	29705	29706	29707	29708	29709	29710	29711	29712	29714
29715	29716	29717	29718	29719	29720	29721	29722	29723	29724	29725	29726	29727	29728
29729	29730	29731	29732	29733	29734	29735	29736	29737	29738	29739	29740	29741	29742
29743	29744	29745	29746	29748	29749	29750	29751	29752	29753	29755	29756	29757	29758
29761	29762	29763	29764	29765	29766	29767	29768	29769	29770	29771	29772	29773	29774
29775	29776	29778	29779	29780	29781	29782	29783	29784	29785	29786	29787	29788	29789

29790 29791 29792 29794 29795 29796 29798 29799 29800 29801 29802 29803 29804 29805
29806 29807 29808 29809 29810 29811 29812 29813 29814 29815 29816 29817 29818 29819
29820 29821 29822 29824 29825 29826 29827 29828 29829 29830 29831 29832 29833 29834
29835 29836 29837 29838 29839 29840 29841 29842 29843 29844 29845 29846 29848 29849
29850 29851 29852 29853 29854 29855 29856 29857 29858 29859 29860 29861 29862 29863
29864 29865 29866 29867 29868 29869 29870 29871 29872 29873 29874 29875 29876 29877
29878 29879 29880 29881 29882 29883 29884 29885 29886 29887 29888 29889 29890 29891
29892 29893 29894 29895 29896 29897 29898 29899 29901 29902 29903 29904 29905 29906
29907 29908 29909 29910 29911 29912 29913 29914 29915 29916 29917 29918 29919 29920
29921 29922 29923 29924 29925 29926 29927 29928 29929 29930 29931 29932 29933 29934
29935 29936 29937 29938 29939 29940 29941 29942 29943 29944 29945 29946 29947 29948
29949 29951 29952 29953 29954 29955 29956 29957 29958 29960 29961 29962 29963 29964
29965 29966 29967 29968 29969 29970 29971 29972 29973 29974 29975 29976 29977 29978
29979 29980 29981 29982 29983 29984 29985 29986 29987 29988 29989 29990 29991 29992
29993 29994 29995 29996 29997 29998 29999 30000 30001 30002 30003 30004 30006 30007
30008 30010 30011 30012 30013 30014 30016 30017 30018 30019 30020 30021 30022 30023
30024 30025 30026 30027 30028 30029 30030 30031 30032 30033 30034 30035 30036 30037
30038 30039 30040 30041 30042 30043 30044 30045 30046 30047 30048 30049 30050 30051
30052 30054 30055 30056 30057 30059 30060 30061 30062 30063 30064 30065 30066 30067
30068 30069 30070 30071 30072 30073 30074 30075 30076 30077 30078 30079 30080 30081
30082 30083 30084 30085 30086 30087 30088 30089 30090 30091 30093 30094 30095 30096
30097 30099 30100 30101 30102 30103 30104 30105 30106 30107 30108 30109 30110 30111
30112 30113 30114 30115 30116 30117 30118 30119 30120 30121 30122 30123 30124 30125
30126 30127 30128 30129 30130 30131 30132 30133 30134 30135 30136 30137 30138